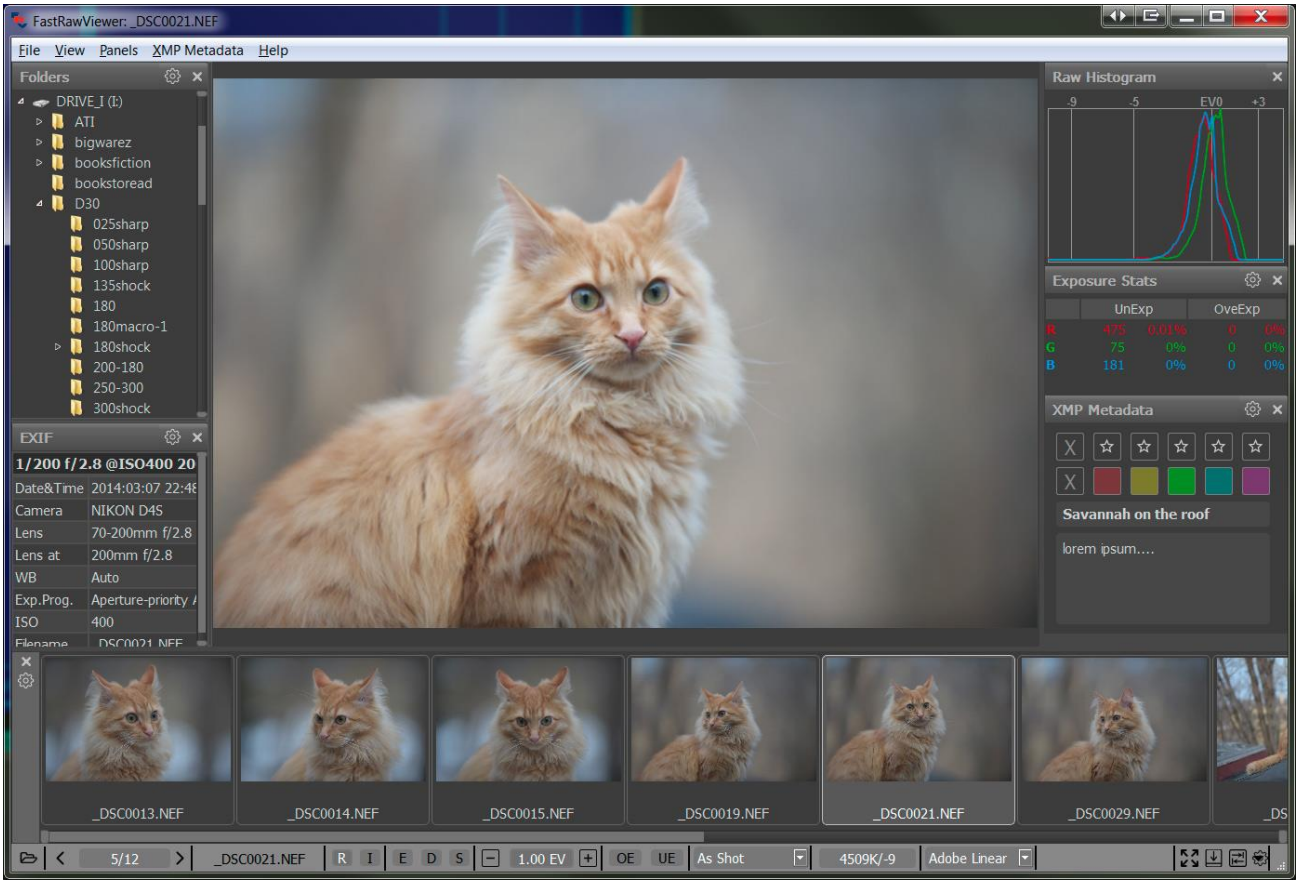
Fast RAW Viewer

Version 1.3
User Manual



LibRaw

How FastRawViewer Helps You

FastRawViewer (FRV) is the only solution for those who:

- Shoot in RAW and are tired of wasting hours or days on browsing through piles of shots and sorting them.
- Tired of rendering all those RAWs into JPEGs so that you can quickly browse through them with your client, CMO, senior designer, editor in chief; or show them to your friends and family members.
- Are in constant need of very quick viewing, visually and technically analyzing, sorting through hundreds or thousands of RAW shots, and selecting the apt ones for further processing.
- Want to shoot in RAW, but don't, fearing to get mired in sorting RAW files.
- Are forced to use JPEG format, because your previous experiences tell you that it is impossible to quickly select and show your client the images taken in RAW.
- Are in need of tools to instantly adjust white balance and exposure *(brightness)* right while browsing through the shot.

FastRawViewer *is the first and the only dedicated application with the purpose of* ***extremely fast culling and pre-processing of RAW images:*** i.e. display, visual and technical analysis, applying basic corrections, sorting and setting aside or directly transferring the selected ones for further processing.

FastRawViewer Strengths:

- Display of the **actual RAW** as well as the **actual RAW histogram**
- For the first time, a comfortable speed of RAW file viewing *(together with histograms),* provided by **FastRawViewer** using the power of modern processors and video cards to process RAW images:
  - **6-8 frames per second** on a modern desktop computer for files from modern photo cameras *(16-36 Mpix, testing was conducted on a mix of shots from recent cameras, SSD recommended for peak performance).*
  - **24-30 frames per second** for CinemaDNG 2.5k on the same equipment *(we used Blackmagic Pocket Cinema files for testing).*
- Support of almost **every single existing RAW format** *(that is, almost every known digital camera)*[1], including native out-of-camera **DNG** files as well as the files converted to DNG.
- Instant display of RAW files directly from any memory card or other file storage - without customary delays for importing, creating catalogues, libraries, and temporary databases.
- View **JPEGs** *(including embedded JPEG thumbnails)* – and also display the histograms.

[1] With only one significant exception: Foveon cameras are not supported.

- The convenience of working with the shots taken in the RAW + JPEG mode, with two files being paired:
  a) While listing through files, you have the option to ignore the second file in the pair.
  b) JPEGs *(including embedded thumbnails)* are considered to be "additional images" and are immediately accessible for viewing.
  c) When you move a file from the RAW + JPEG pair to another folder, the other file follows.
  d) And, of course, you can always switch this mode off, if you so choose, and treat the files as separate.
- The possibility of doing a quick visual and technical analysis by:
  a) Examining the **real RAW histogram.**
  b) Assessing the exposure based on:
     i. **Spotlighting of over- and underexposed areas** on the shot.
     ii. Over- and underexposure **statistics.**
  c) Outlining the **in-focus** and **highly detailed areas** on the shot.
  d) Assessing **per-channel exposure** and **acutance.**
  e) Assessing the **noise level in the shadows.**
- Time-saver: **exposure** and **white balance adjustments** can be **made while browsing RAW files** and **are saved in XMP** files so that they can be automatically applied when you open that shot in Adobe Lightroom or Adobe Camera Raw.
- Time-saver for series, including panoramas: propagation of white balance, exposure, and image orientation adjustments from one shot to the entire series.
- Highly compatible system of assigning **labels and ratings** to images, including the user-defined labels. Ratings and labels are written into XMP files and are read by Adobe software *(and others which acknowledge XMP sidecar files)*.
- **Copying and moving the selected shots** into folders chosen by the user.
- **Moving the rejected shots** into a special folder, which can be reviewed again later.
- Transferring the selected shots for further processing to a user-selected RAW converter directly from **FastRawViewer.**
- Support for **black and white RAW,** including shots from cameras converted to b/w by removing the color filter array.
- Warnings when **FastRawViewer** comes across a damaged RAW file.
- Monitor color profile support, without the loss of image rendering speed.
- Modifying settings to suite your workflow
  a) You can set your own keyboard *(or keyboard+mouse)* shortcuts for every action.
  b) The settings panel allows you to turn off the ones you don't need, and change the others to your preferences.

Table of Contents

Conventions used in this Manual

The user manual is the same for Windows and Mac versions of FastRawViewer.

All of the standard keyboard shortcuts are given in Windows notation (for example, Ctrl-O).

For OS X please use the following substitutions:

- **Ctrl** on Windows – is **Command** on Mac.
- **Alt** on Windows – is **Option** on Mac.

All keyboard shortcuts are fully customizable *(see below, the "Keyboard Shortcut Settings")*. Throughout this text we will be using default program settings for keyboard / mouse shortcuts.

System Requirements

Windows

- Recommended system: Windows 7 – Windows 8.1, 64-bit.
- 32-bit versions Windows: Windows Vista – Windows 8.1
- Windows XP is supported in a separate "Legacy" version of **FastRawViewer**.
- Processor with SSE3 support or later *(meaning released 2005+):*
    - Intel: Pentium 4 Prescott or later; Celeron D or later, any Core processor, Intel Atom.
    - AMD: Athlon 64 or later.
    - The complete list of supported processors is available on http://en.wikipedia.org/wiki/SSE3
- Video card with DirectX 9.0 support or later, or with OpenGL 2.1 or later *(see below **Choice of version: OpenGL or DirectX**)*.

  FastRawViewer will work with practically any video card with 3D acceleration support, released 2006+ *(users of older cards may experience some problems)*.

Mac

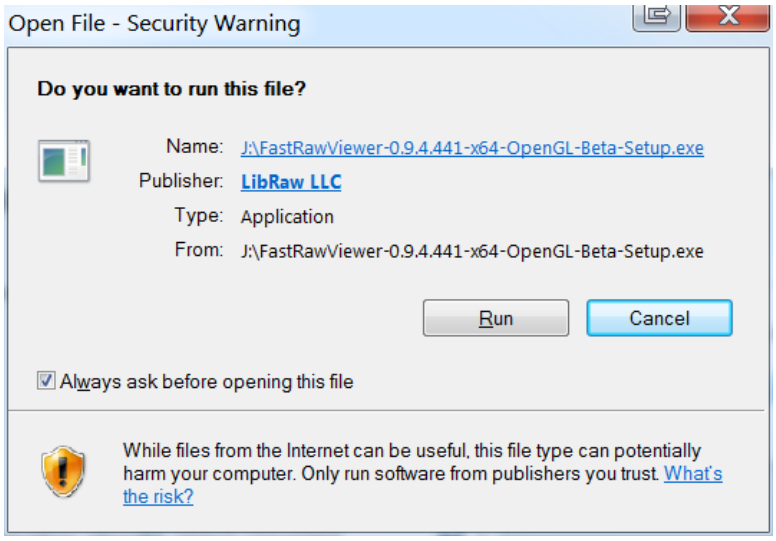
- Intel-based Mac.
- Processor with 64-bit support *(that's every Intel Mac, excluding Mac Mini 2005).*
- Mac OS X 10.6 or later.
- We recommend a video card with OpenGL 2.1 support *(that's **every** native Mac video card, that works with OS X 10.6)*. An OpenGL emulator will be used if such a video card is not present in the system; some of the advanced features of **FastRawViewer** will take significant time to render.

Software Installation

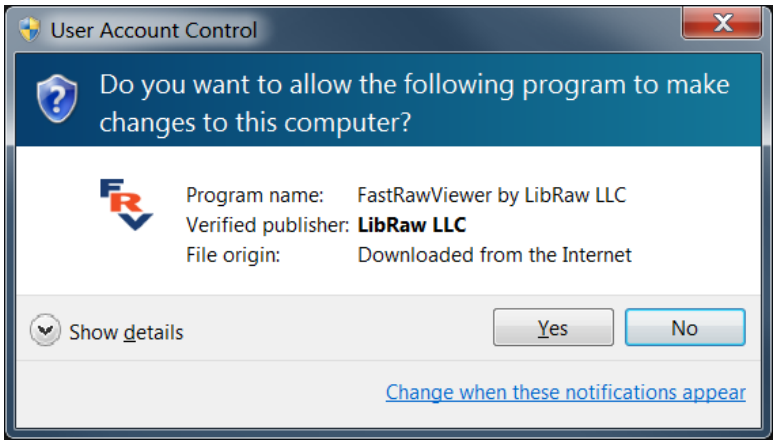
Windows Installation

The program installation starts by running the executable file of the distribution package (**FastRawViewer-1.2.0.xxx--Setup.exe).**

If you downloaded **FastRawViewer** from our site on the first program launch, current versions of Windows will display the following security warning:



After the "Run" button is pressed, the UAC *(Windows User Access Control)* system will display a warning once again:



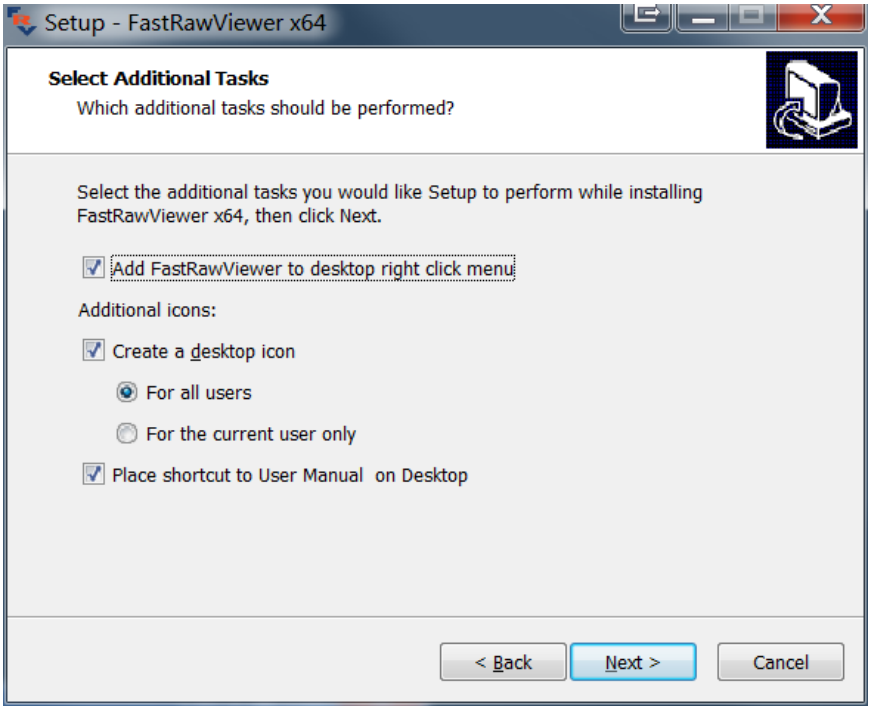
Both dialogs allow you to verify that the setup program is signed with unique LibRaw LLC electronic signature.

To proceed with the installation, you must agree to the dialog above, and the usual Setup Wizard will be launched:

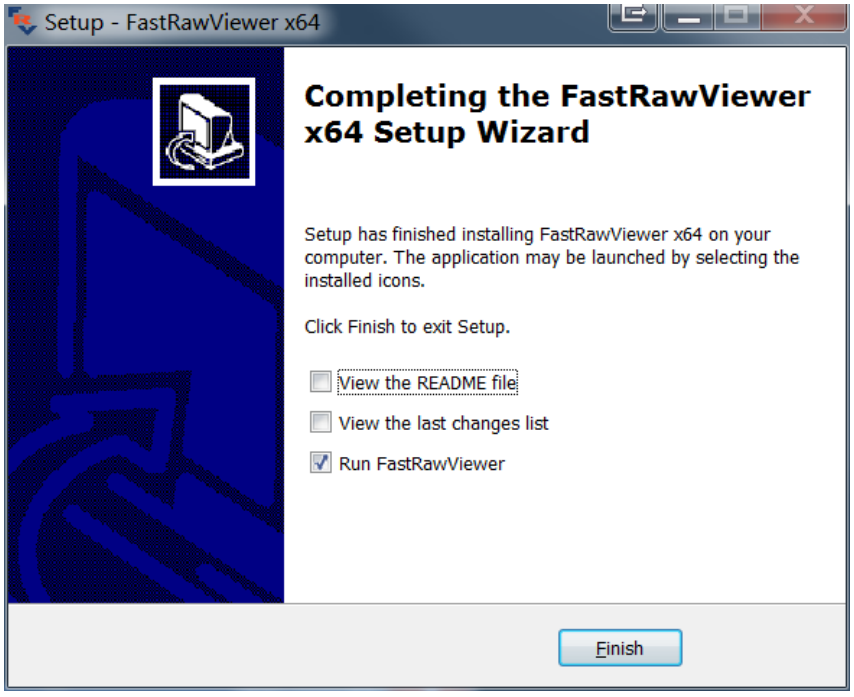
At the next screens of Setup Wizard:

1. The User License is displayed.
2. An installation folder is suggested; a different folder may be selected by the user.
3. Creating a Group in the Programs menu is suggested.

4. A list of possible additional actions is shown: add **FastRawViewer** to desktop right-click menu, add icon to the desktop, add icon to the Quick Launch menu:



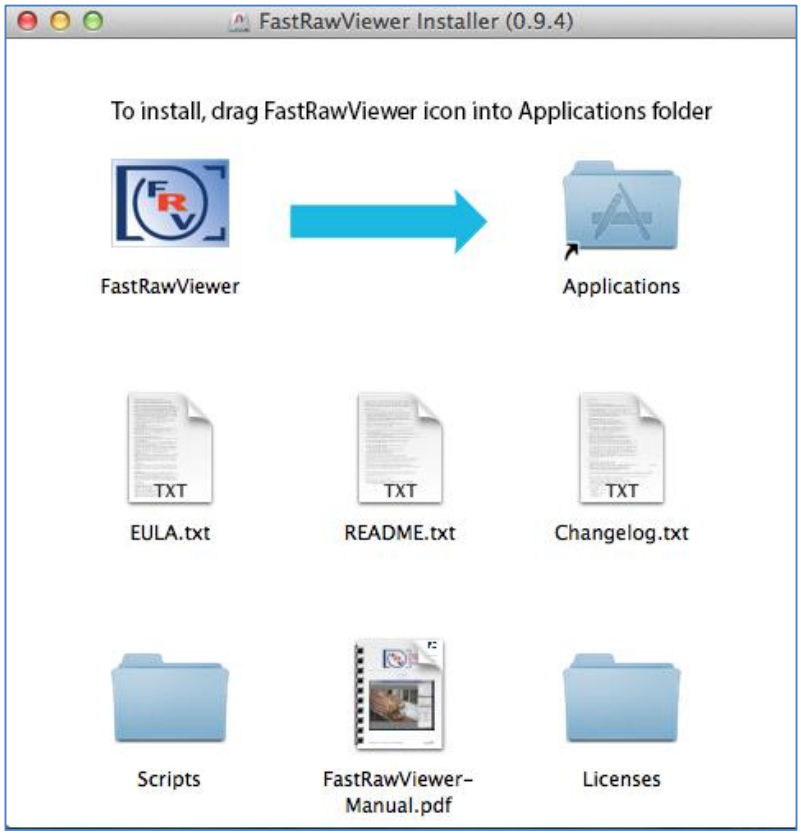
Afterwards, the installation takes place. Upon completion, the following screen appears:



In case of any errors during installation, please contact us via www.fastrawviewer.com/contact or technical support forum at www.fastrawviewer.com/forum.

Mac OS X

Double click on FastRawViewer-1.x.x.dmg to mount the **FastRawViewer** disk image you've downloaded. The content of the disk image will appear like this:



Drag **FastRawViewer** icon onto the **Applications** icon. The program will be copied to Applications folder and ready to run.

Other items contained in the disk image are:

- **FastRawViewer** Manual *(FastRawViewer-manual.pdf).*
- Brief description *(README.txt)* and Changelog *(Changelog.txt).*
- End-User License Agreement *(EULA.txt)*, Copyright Information *(Copyrights.txt).*
- Licenses and Copyrights for libraries and components used in **FastRawViewer** *(Licenses folder)*.

Windows: Hardware Acceleration Method Selection

FastRawViewer uses graphics acceleration for many operations. When working in Windows, the following graphics engines can be used:

- OpenGL *(hardware acceleration).*
- DirectX 9.
- DirectX 11 *(Windows 7 and newer only)*.

During **FastRawViewer's** first launch, an automatic selection of the graphics engine is made, depending on the operating system and the hardware you have:

- Windows XP/Windows Vista: DirectX 9 will be selected.
- Computers with old Intel graphics adapters on a separate chip *(chipsets like G45, 845G, 965G, etc.)*: DirectX 9 will be selected.
- Computers with two or more graphics adapters, or two or more monitors: OpenGL will be selected.
- All other cases: DirectX 9 will be selected.

The above-listed rules are sorted through "from top to bottom" and the first fitting one is used.

The choice of graphics engine is made once and stored in the Windows Registry, so that the process of the selection of the graphics engine is not repeated during subsequent launches of **FastRawViewer**.

The automatic selection of graphics hardware acceleration can be, however, changed by the user, either through the **FastRawViewer** Preferences *(see the "GPU Processing" section in the "Program settings" chapter)*, or by launching the Registry scripts *(see the "Setting the graphics acceleration manually" section in the "Troubleshooting" chapter)*.

In rare cases of problems, usually caused by a buggy old video driver, the automatically chosen graphics engine might not work with your hardware/drivers. In this case one of the following will take place:

- If in DirectX11 mode: the program will switch to DirectX9 mode *(so that DirectX9 mode will be active when the user re-launches **FastRawViewer**)* and exits.
- If in DirectX9 mode: the program will switch to OpenGL mode *(so that OpenGL mode will be active when the user re-launches **FastRawViewer**)* and exits.
- If in OpenGL mode: the program will suggest switching to DirectX9 mode and re-launching the program.

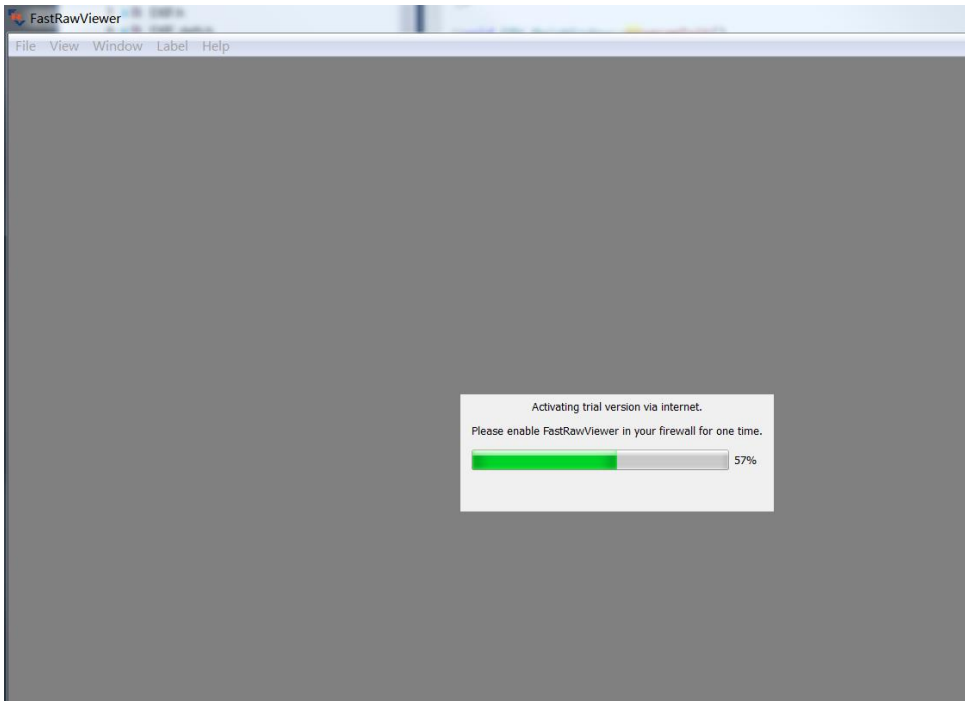
This is described in more detail in the "Troubleshooting" section.

Program Activation

Activating the Trial Version

During the first run **FastRawViewer** will display a splash screen suggesting the activation of the trial version.

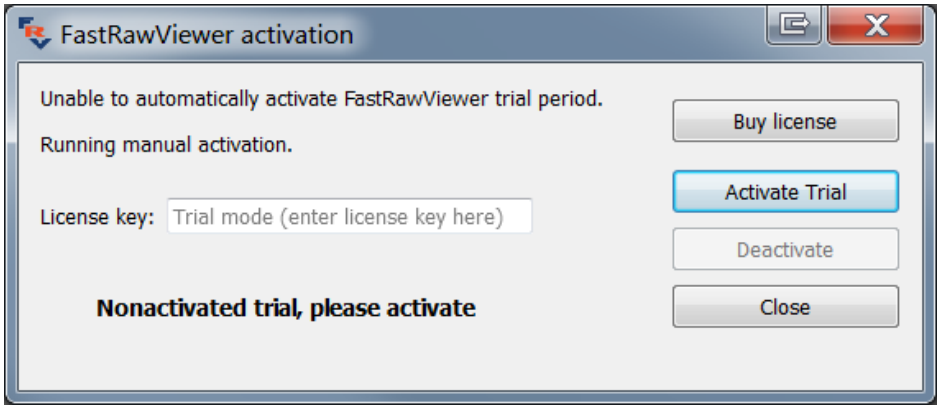
Immediately after that, with the main program screen being opened, **FastRawViewer** will try to connect to Internet to activate the trial version:



No private data is transferred during the activation process; the only data that is passed through the Internet is **FastRawViewer** version number and unique non-reversible 64-bit hash code identifying your computer; this code can't be decoded to extract any private or personal data.

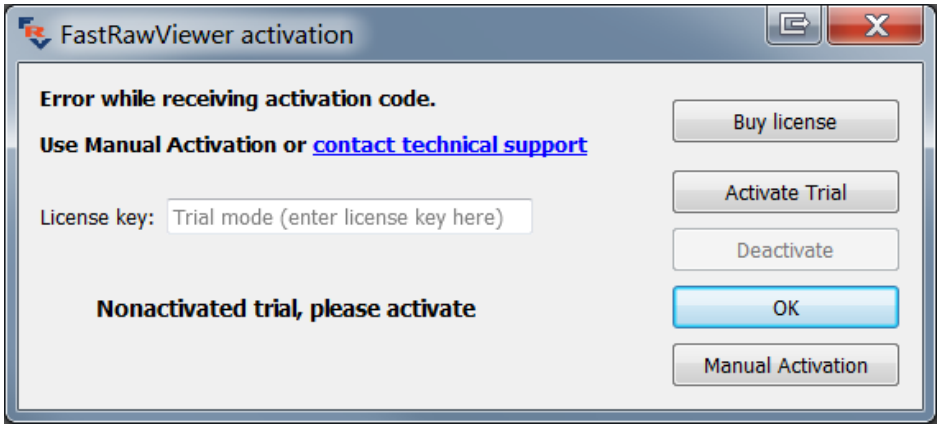
After the successful automatic activation the trial period begins; the trial time left is indicated in Help-About window and on the splash screen that pops up when **FastRawViewer** is started.

In case the automatic activation was impossible for some reason *(no Internet access, or **FastRawViewer** was blocked by firewall)* you will be presented with the screen for manual activation:



Here you can allow **FastRawViewer** a one-time Internet access and press Activate Trial button to start 30-day free trial period.

If after pressing Activate Trial button **FastRawViewer** still can't access activation server an additional button for **Manual Activation** will appear:

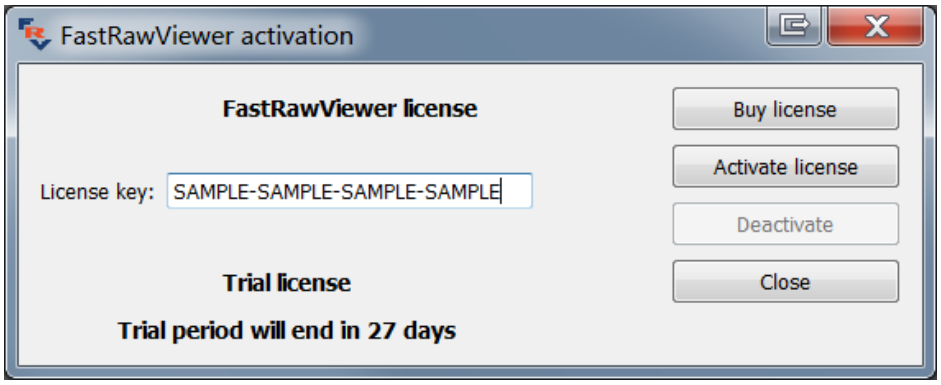


Pressing this **Manual Activation** button will take you to manual activation dialogue *(for more details, please see below, in "Manual Activation" section).*

Activation of the License You've Purchased

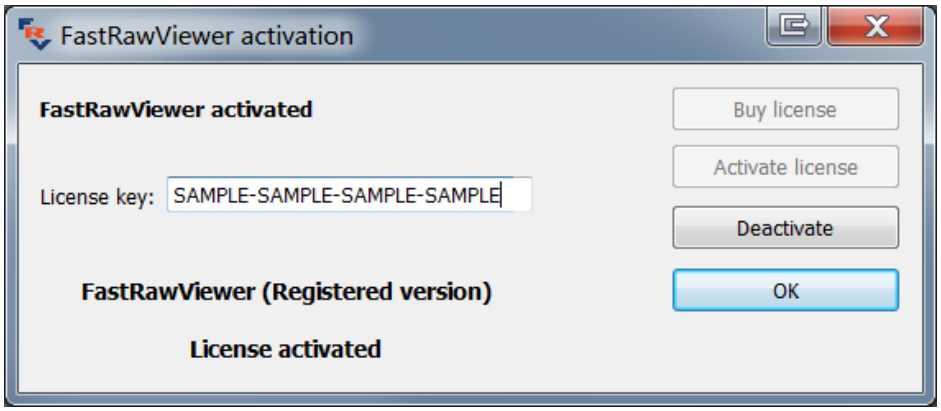
To use **FastRawViewer** after the trial period, the user will need to obtain a full license.

To obtain the license, please click the **Buy License** button or open www.fastrawviewer.com/purchase in your browser. As a result of the transaction, you will be provided with the license key *(online and as a separate email)*. This license key should be entered into the License Key field of the activation dialog, which is also available through **Menu-Help-Purchase/Activate**:



After the license key is entered, please click **Activate license** button. The license will be activated and you will be able to continue using the program.

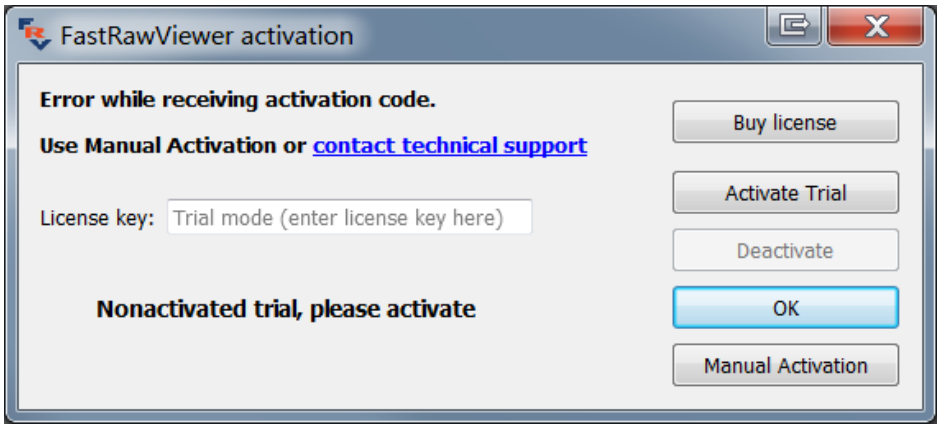
The **Help-Purchase/Activate** menu item will now be renamed to **Help-Registration data**, and the respective dialog will show your registration data:



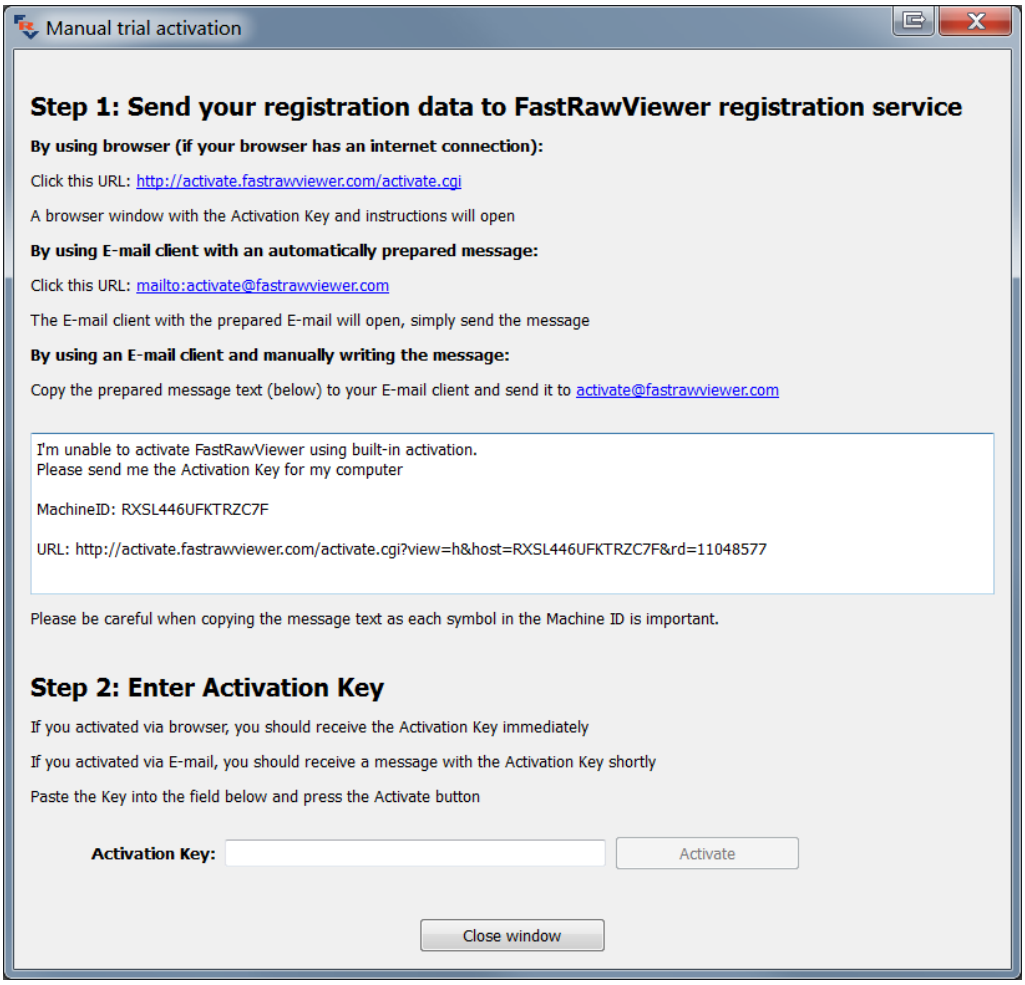
To complete the activation *(of both the trial and the fully licensed version)* the program needs a one-time access to the Internet. If you cannot grant the appropriate Internet access permissions, you can activate the program manually.

Manual 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.



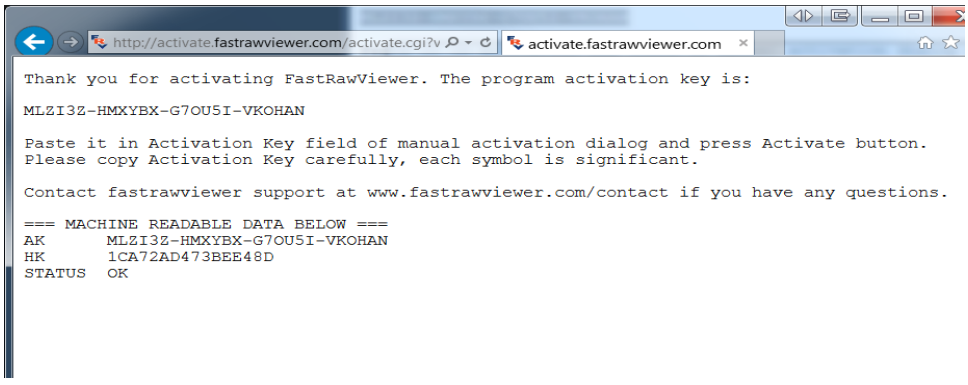
After clicking the **Manual Activation** button, a **Manual Trial Activation** window will pop up:



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.cgi and you will see a browser window pop up with your unique activation key:

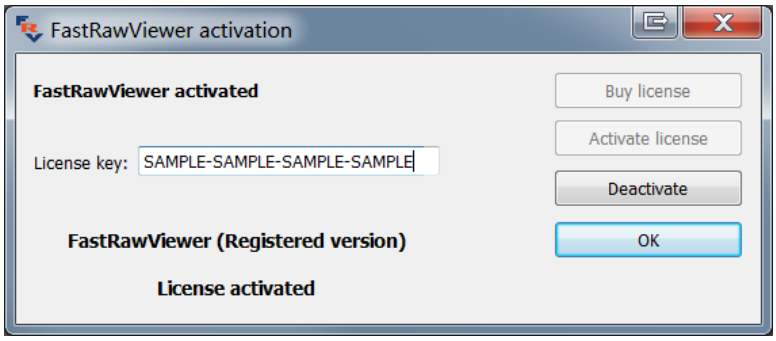


By using E-mail client with an automatically prepared message – click the mailto:activate@fastrawviewer.com link and your mail client will create a new pre-populated email to activate@fastrawviewer.com You will only need to click send.

By using an E-mail client and manually writing the message – you can send an email to activate@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**.

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



Using the Program: First Steps

Launching FastRawViewer

To launch the program:

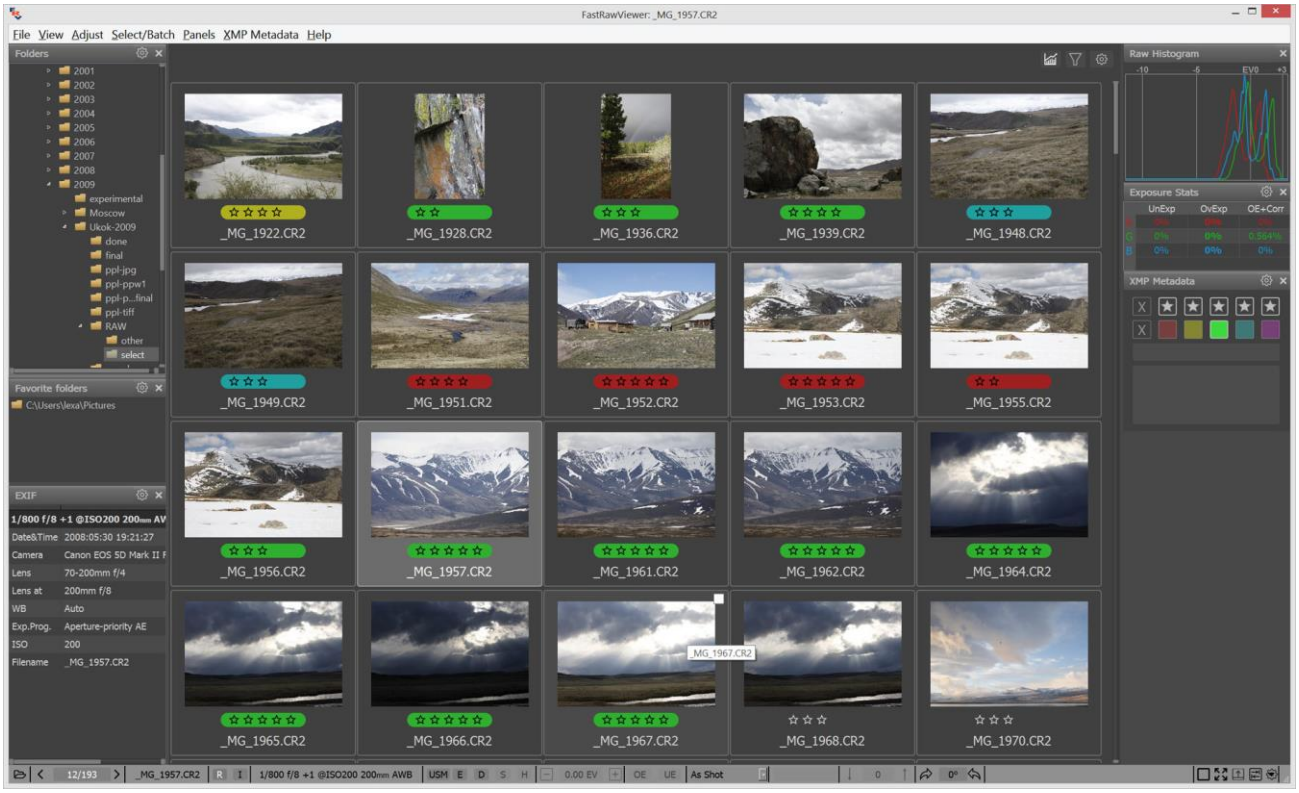
- Start it up the usual way *(Double-click the icon).*
- Or drag any RAW or JPEG file onto the icon, then the program will open and display that file.
- Or drag a folder *(catalogue)* onto the icon - the program will start and will open the first RAW file in the folder.

After start-up you will be presented with the program's main screen.

Main Screen

View modes: "Grid" and single-file

If **FastRawViewer** is launched without indicating a filename, if will start in **Grid** mode, displaying the content of a selected folder:

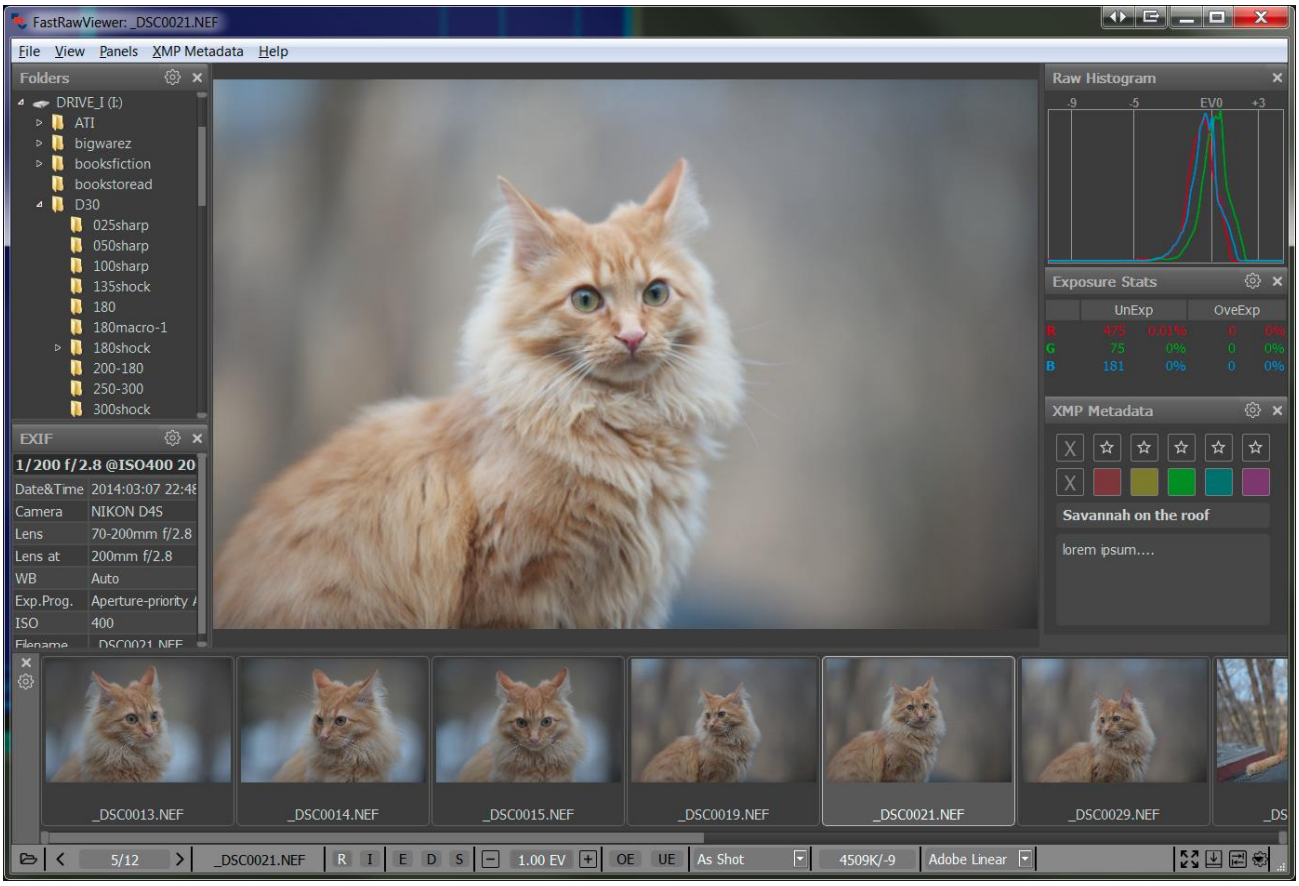


If **FastRawViewer** is launched over a specific file *(for example, by dropping a RAW file onto the program's icon, or by double-clicking a file which is associated with **FastRawViewer**)*, or by selecting one of the files from the "Grid" by:

- A double-click on the file.

- **Menu – View – Switch** to single image.
- Navigation by using the “arrowkeys” in the main window or the bottom “**Filmstrip**” bar and pressing **Enter**.

The program will switch to a **Single-File View** mode *(Single File view)*:



Switching back to **Grid** mode:

- **Menu – View – Switch** to image Grid *(or press G).*
- **Menu – View – Close** single image *(or Esc; Esc/close single image also exits full screen mode).*

On the program main screen:

- **On top**, as usual, there is the menu that allows access to almost all features, excluding those actions, which can only be performed with the mouse.
    - **File** – navigating through the files *(opening files and folders, moving to the next file, moving files to different folders, sending the currently displayed file to an external program / raw converter).*
    - **View** – controls image display mode *(full-color or per-channel viewing; outline the highly detailed areas and areas containing high-contrast edges (focus peaking), etc.).*

  - **Adjust** – actions that alter the XMP Sidecar files: changing exposure, white balance, and orientation.
  - **Select/Batch** – actions with several files.
  - **Panels** – controls the visibility and layout of information panes; on the above screenshot, those panes are located to the right of the image.
  - **XMP Metadata** – allows to choose XMP Ratings / XMP Labels.
  - **Help** – the name says it.
- **Located in the central part of the window**:
  - If in single file mode, the RAW image is displayed;
  - If in "Grid" mode, the preview thumbnails of the current folder are displayed.
- **To the left, the following panels are displayed**:
  - **Folder** tree and the **Favorite** folders panel *(those folders which were selected for quick access).*
  - **EXIF** data.
- **The following panes are located to the right:**
  - **Histogram** *(RAW for RAW files, JPEG – for JPEG display).*
  - **Over/Underexposure statistics**.
  - **XMP Rating and XMP Label**.
- **The Filmstrip/Thumbnails panel** is placed below the window, showing the file previews for the current folder.
- **Additional information and operational elements are placed in the bottom (status) bar. Default elements:**
  - **File open** icon.
  - Buttons for **navigating through the current folder**: previous file, number of file in the file list and the length of the list, next file.
  - Buttons for **switching between RAW-JPEG-external JPEG**.
  - Buttons for turning on **Screen Sharpening**, **Focus Peaking**, **Shadow Boost** and **Highlight Inspection**.
  - **Exposure Correction** control button.
  - **Overexposed** and **Underexposed** area display buttons.
  - Preset **White Balance** choices drop-down menu.
  - **Contrast Control** section: the up/down arrows and the current setting indication.
  - Buttons for quick control: Fullscreen, hide/show Filmstrip panel/all panels, display and edit settings call-up.

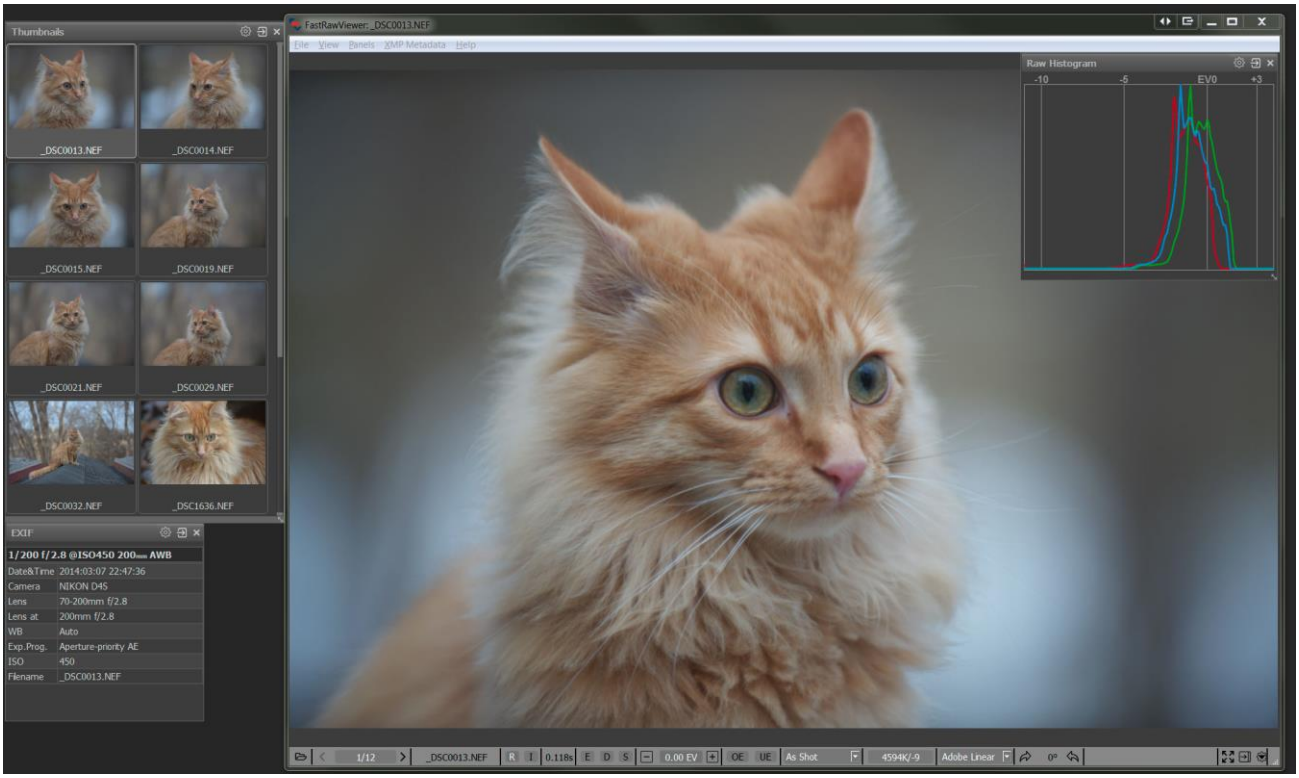
- Aside from the aforementioned, if the window is wide enough, the following buttons will be displayed:
    - **File name**
    - **Brief EXIF** data for the shot *(Exposure settings, ISO setting, applied exposure compensation, use of flash, lens's focal length).*
    - **Manual White Balance** customization button.
    - **Contrast Curve** selection menu.
    - **Image Orientation** indicator and **Rotation** buttons.

  Additionally, the following settings can be indicated if desired:
    - The name of the **current folder**.
    - Current **image zoom factor** and the control buttons.
    - Time spent on the loading and decoding of the current file.
    - **Per-channel display** (R-G-B) button and simulated conversion to **a black and white version**.
    - **XMP rating and label** control buttons.

The elements shown in the bottom status bar can be customized according to your needs. For this, press the "**Customize FastRawViewer**" button on the lower right corner of the screen, choose "**Customize bottom bar**" and select the necessary display mode for each possible element. For more detail, see below in the "*Customizing the status bar***"** section.

Workspace

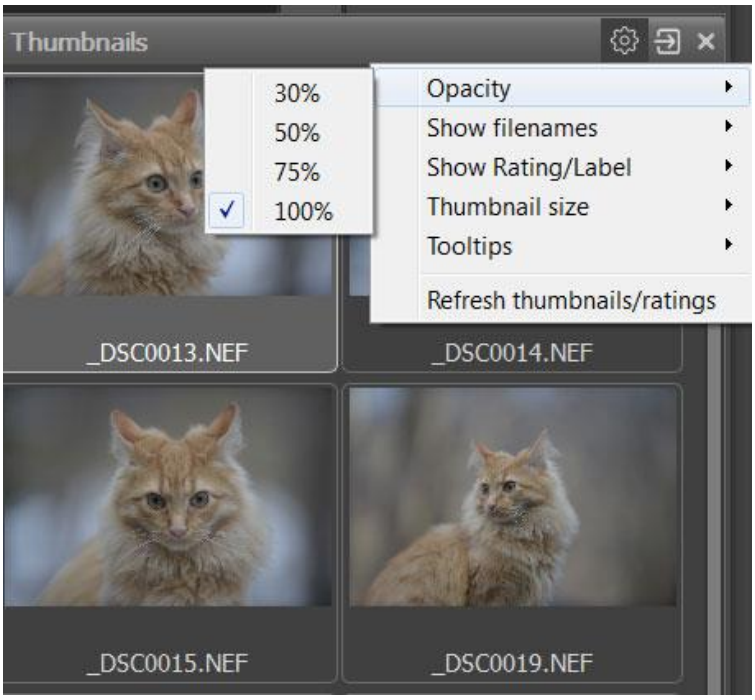
The informational panels (*Histogram, EXIF, Folders etc.)* can be dragged from the main window of the program to the side (for instance, to a second monitor) and be made “floating”. Panels can be turned on/off through the **Panel** menu *(or the F2-F7 hotkeys)*, the statistics and XMP-data panels are fixed in size, but the sizes of the other panels can be changed.



The header of every panel has a settings button *(gear icon, ⚙)*; when pressed, it brings forth a menu, allowing one to customize the panel.

Any floating panel can be made semi-transparent and placed in the workspace, above the image.

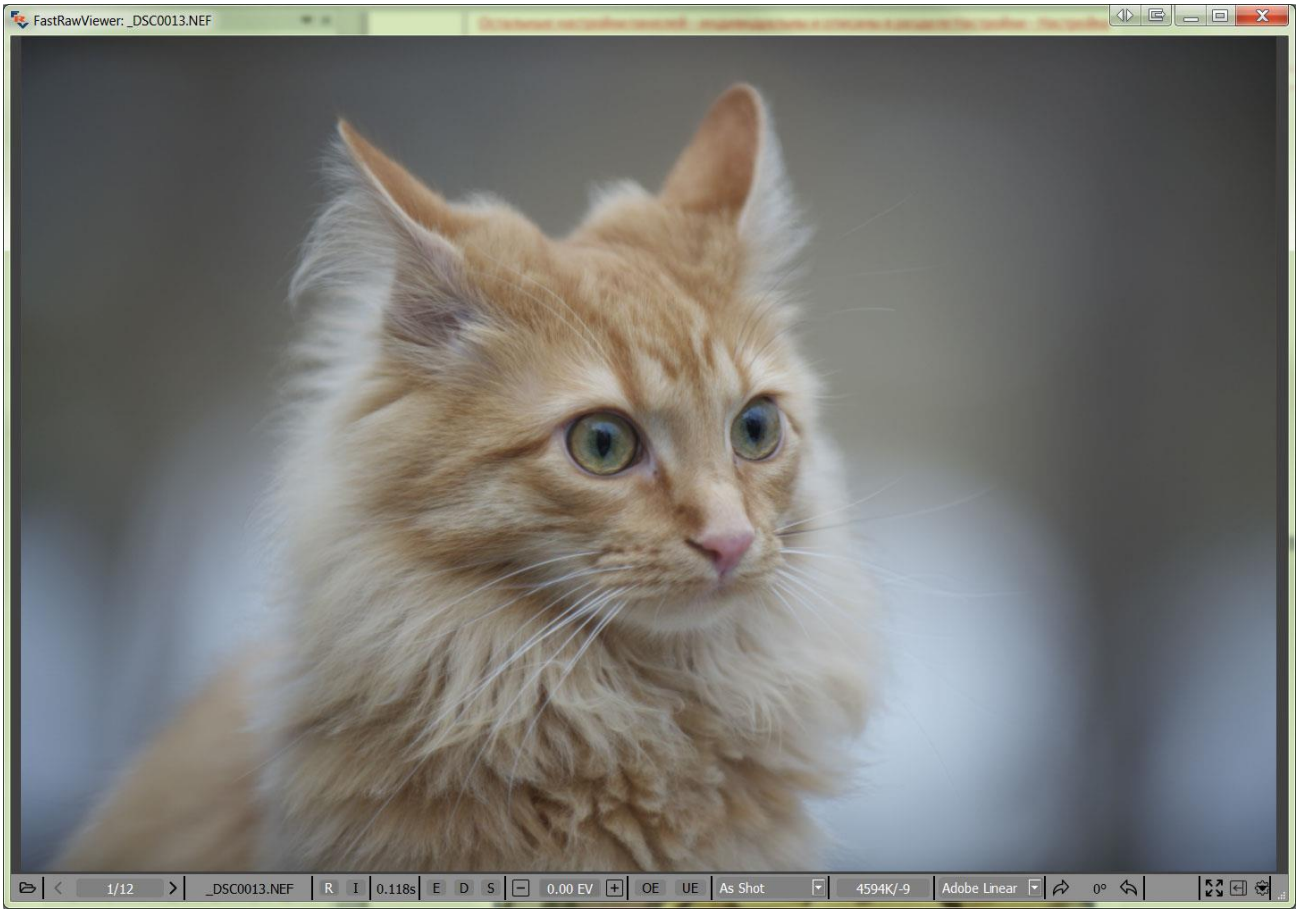
Setting **Preferences – Interface – Disable transparency for panels outside of main window** makes a floating panel completely non-transparent when it is placed outside the main program window.



The other panel settings are individualized, and are described in the "*Informational Panel settings*" section.

Informational panels can be closed *('x' on the upper right corner of the panel or corresponding item in **Menu – Panels**)*, and re-opened through **Menu – Panels.** The same menu has the option **Move all panels to dock**, which will restore the standard layout of the program workspace.

Menu–Panels–Hide all panels *(or, press **Tab**)* – hides all informational panels:



With this, the top menu bar is hidden as well *(this can turned off through **Preferences – Interface – Hide menu bar when hiding information panels**)*. You may, also, hide bottom information bar *(status bar)* by setting **Preferences – Interface – Hide bottom window bar when hiding information panels**.

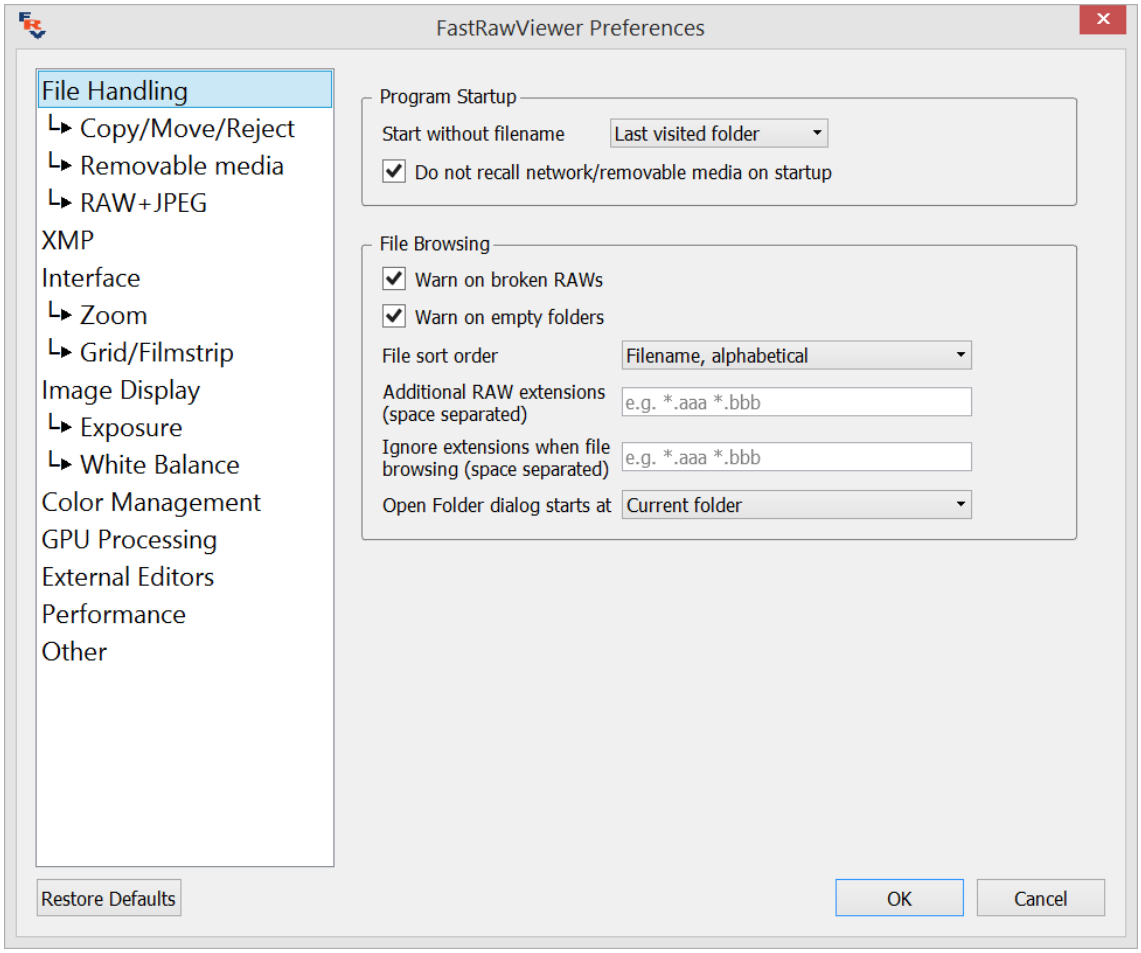
Pressing **Tab** key the second time returns everything to the way it was.

You can disable the hiding of informational panels that are outside the program window. This is useful when, for instance, you have moved them to a second monitor: **Preferences – Interface – Do not hide panels outside of main window.**

Menu – View – Fullscreen *(or the **F** key, or Fullscreen button on the bottom bar)* switches the full screen mode on/off. Choosing this item again or second press of the F key escapes from full screen mode *(for Mac OS X 10.6 we have no true full screen mode, instead the main program window will be maximized)*.

Changing the Settings

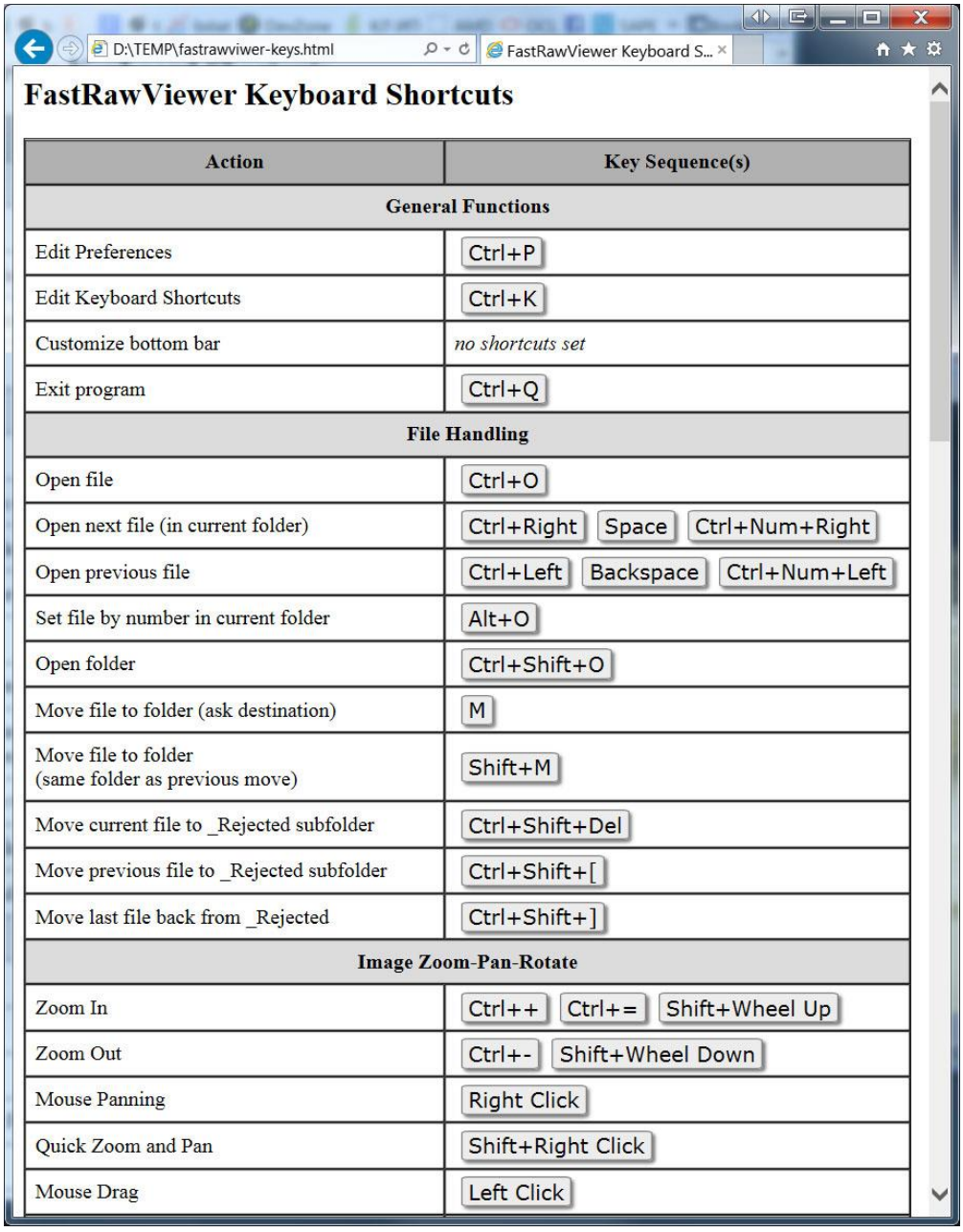
To bring up the settings control window, use **Menu–File–Preferences** ***(Ctrl-P)*** on Windows, **Cmd-comma** (**,**) on Mac/. You will be presented with the following:



Further in the text, this settings control menu ***(Preferences)*** is mentioned many times, each time we refer to particular aspects and features of **FastRawViewer**. Furthermore, everything is described again in the "*Program Settings*" section.

Help with the Keyboard Shortcuts

Every keyboard action can be seen in the **Keyboard Shortcuts Help** window, which can be reached by pressing **F1** function key or through **Menu–Help:**



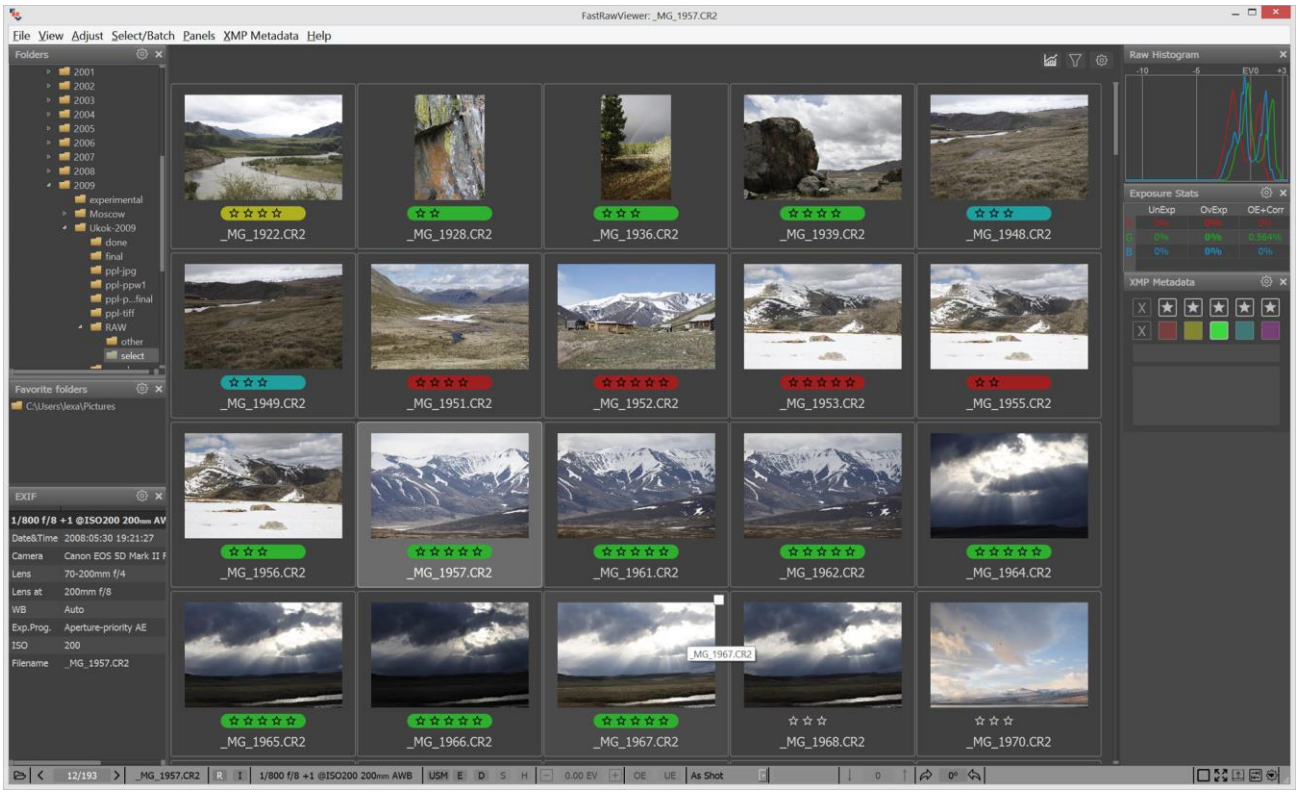
FastRawViewer Keyboard Shortcuts

Action	Key Sequence(s)
General Functions	
Edit Preferences	Ctrl+P
Edit Keyboard Shortcuts	Ctrl+K
Customize bottom bar	*no shortcuts set*
Exit program	Ctrl+Q
File Handling	
Open file	Ctrl+O
Open next file (in current folder)	Ctrl+Right Space Ctrl+Num+Right
Open previous file	Ctrl+Left Backspace Ctrl+Num+Left
Set file by number in current folder	Alt+O
Open folder	Ctrl+Shift+O
Move file to folder (ask destination)	M
Move file to folder (same folder as previous move)	Shift+M
Move current file to _Rejected subfolder	Ctrl+Shift+Del
Move previous file to _Rejected subfolder	Ctrl+Shift+[
Move last file back from _Rejected	Ctrl+Shift+]
Image Zoom-Pan-Rotate	
Zoom In	Ctrl++ Ctrl+= Shift+Wheel Up
Zoom Out	Ctrl+- Shift+Wheel Down
Mouse Panning	Right Click
Quick Zoom and Pan	Shift+Right Click
Mouse Drag	Left Click

All keyboard shortcuts can be changed and tuned to your taste. The instructions on how to do this are in the "*Adjusting the Keyboard Shortcuts*" section below. If the keyboard shortcuts are changed, the help window will show their current state.

The standard list of keyboard macros is given in the «*Standard FastRawViewer Keyboard Shortcuts*» *(at the end of the document).*

Navigating the Files in a Folder while in Grid mode



In **Grid** mode, the main section of the window contains the **Thumbnail** previews of all of the supported files from the current folder.

In the upper-right corner of this section are the following icons *(from left to right)*:

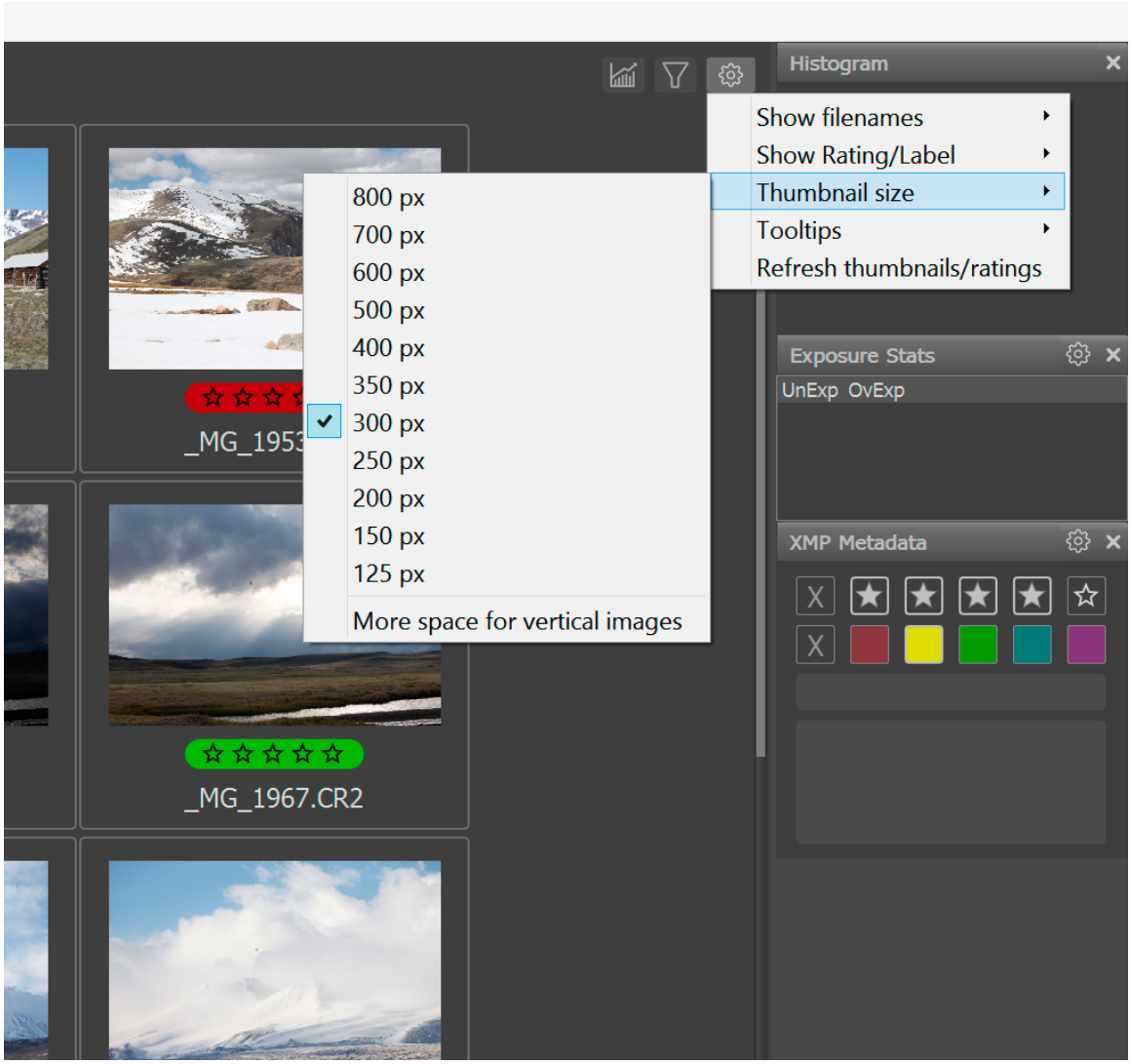
- Turning the following information panels on and off: EXIF-data, RAW-histogram, exposure statistics for the selected file.

  By default, these panels are turned off to save space and maximize speed.
- Controlling the file filtration by label and rating.
- Settings that control the file preview display *(see below).*

Navigation in Grid mode can be accomplished using the following:

- Keyboard: **arrowkeys**, **PgUp/PgDn**, **Home/End**; also you can use the keyboard shortcuts that you customized for **Next File/Prev. File** and **First/Last File** in folder.
- Mouse: the **wheel scrolls** through the contents of the folder **up and down**.

You can customize the file preview using the “gear” icon in the upper-right corner of the “Grid” mode window:



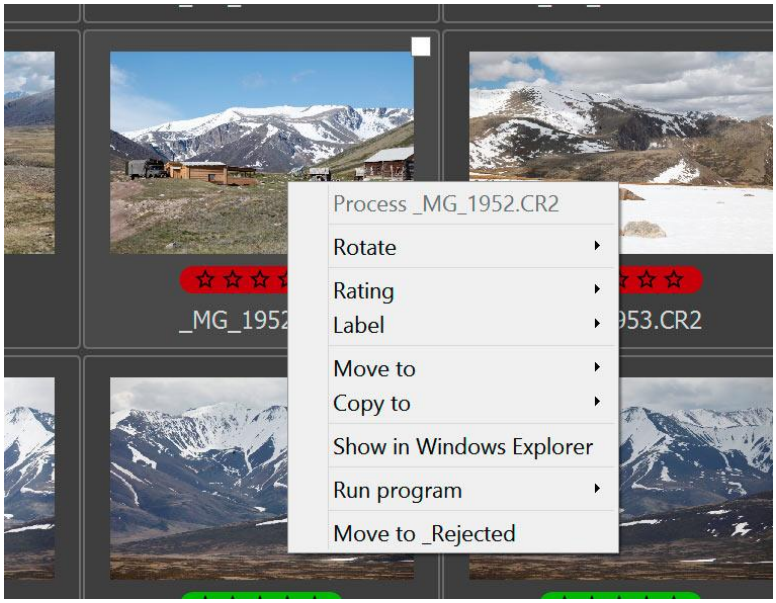
A detailed description of the settings can be found in the “*Customizing Display Modes*” section below.

Working with a Single File

While in **Grid** mode, the following operations can be carried out with a file:

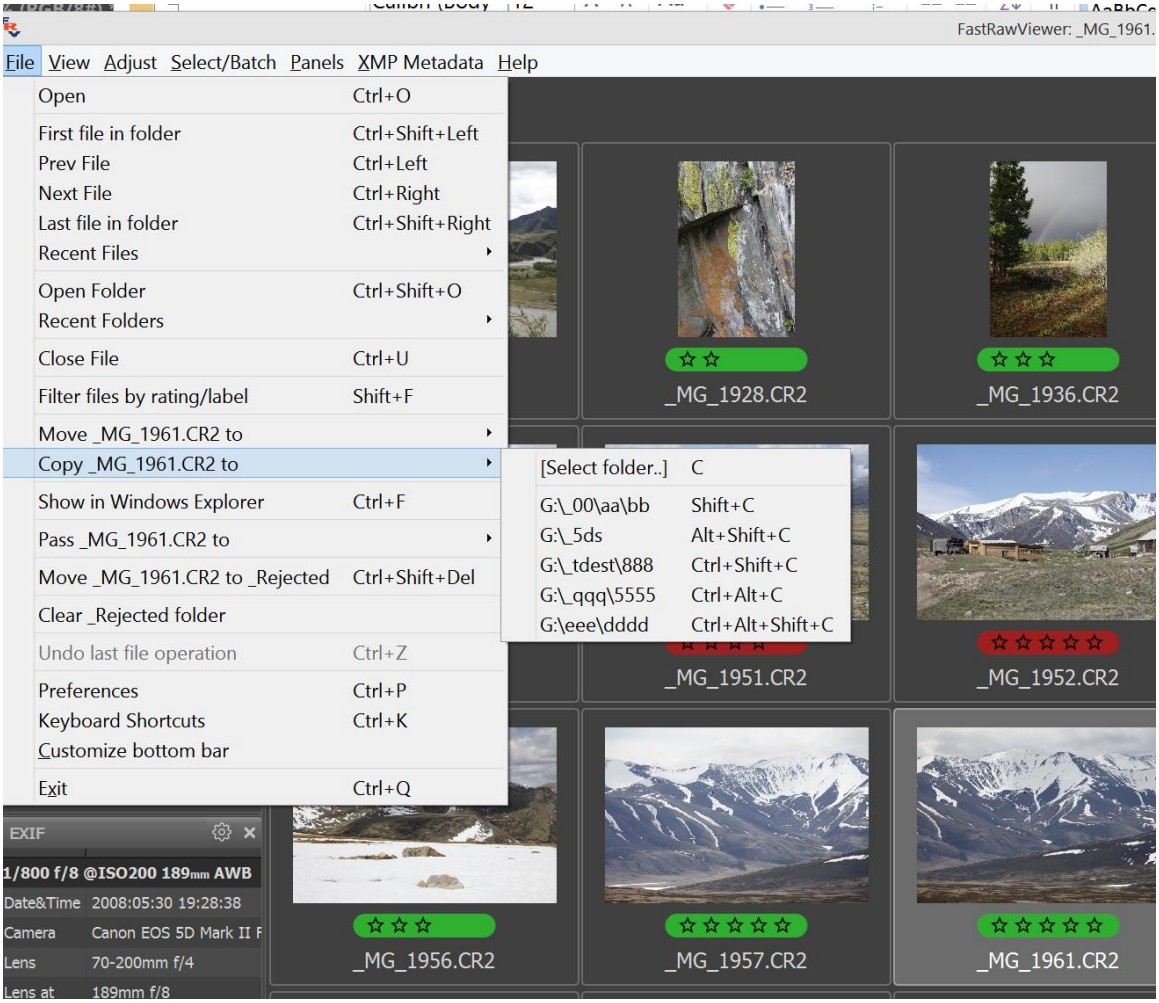
- Switching to single-file mode: double-click or **Menu – View – Switch to single image** or pressing **Enter** *(if the keyboard focus is on the window with the file previews).*
- Rotation (**Menu-Adjust-Rotate**), the new orientation data will be recorded in the XMP-file *(see below).*
- Assigning a rating/label (**Menu – XMP Metadata**), if changed, the rating and label will be recorded into an XMP-file.
- Copying (**Menu – File – Copy**), moving (**Menu – File – Move**), copying to the _Rejected files folder, which is for those, which you may want to delete at a later stage *(see below)*.
- Sending a file for processing in an external program (**Menu – File – Pass *filename* to**).
- Display of a file in a system file manager (**Menu – File – Show in Explorer/Reveal in Finder**).

These same actions *(except for switching to single file mode)* are accessible through the context menu which is activated with a right-click:



Copying and Moving Single Files

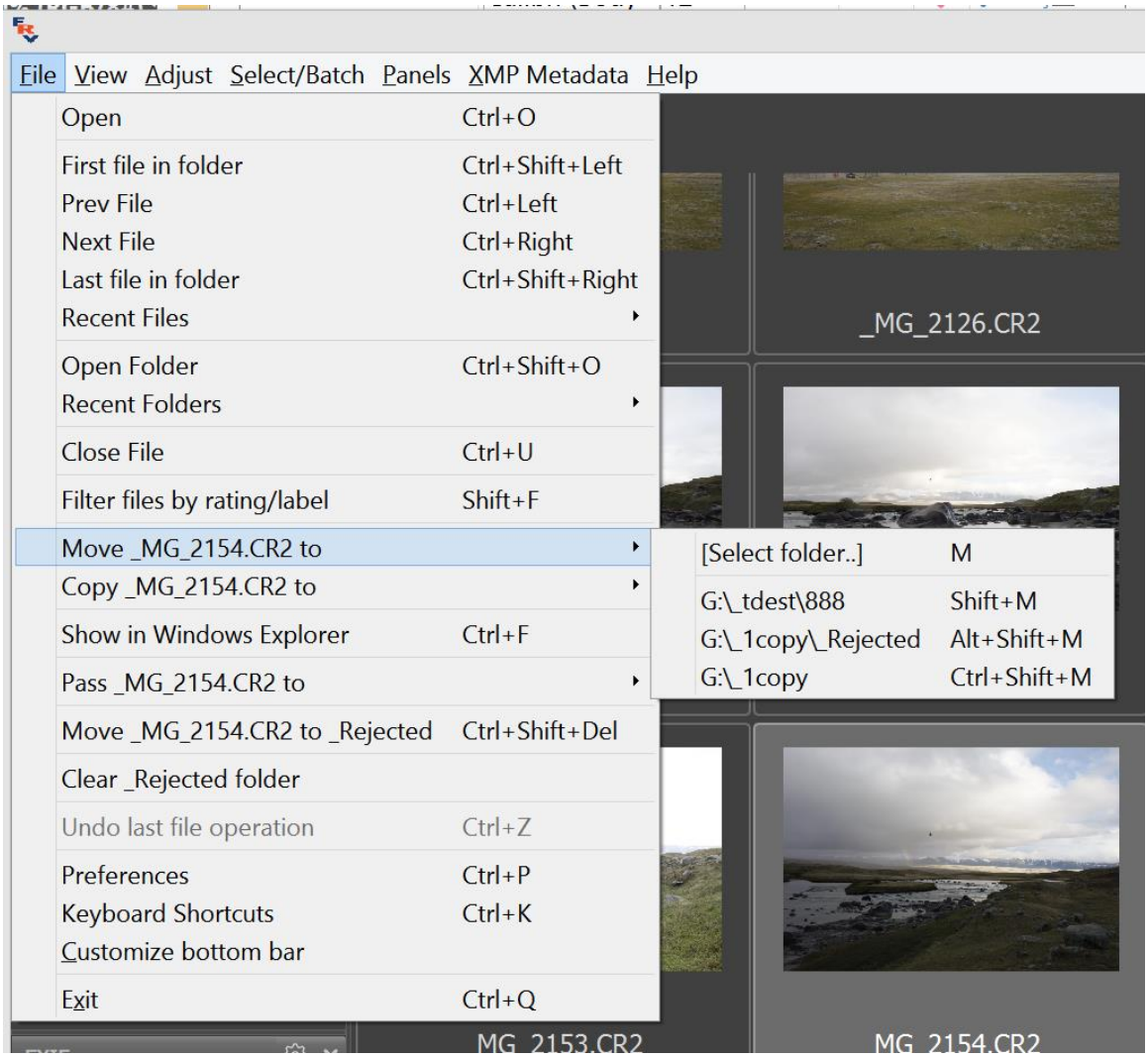
The current *(highlighted)* file in the Grid View can be copied to another folder with **Menu – File – Copy *filename* to – [Select Folder]** *(or pressing **C**)*. The dialog to select the destination folder will appear, and after the destination folder is selected the file will be copied.



The names of the folders which were used for copy operations are stored in the menu items below **Menu – File – Copy .. to – [Select folder]**. The most recent copy destination is at the top of this list, below are the folders which were used earlier. The list can contain up to five folders.

All of the folders in this list can be accessed through the keyboard *(C, Shift-C, etc.)*, which allows one to conveniently copy to those destinations without accessing the menu.

Moving files works much the same way: after a file is moved to a destination via the (**Menu – File – Move .. to – [Select folder]** or pressing **M**) the path to this destination folder will be stored as an element of the menu under **[Select folder],** and can be used in the future without subsequently choosing the destination, using the following dialog:



The lists for copy and move destinations are kept separately.

Copy and move operations work not only over the RAW file, but also copy/move the following to the same destination:

- External JPEG-file *(in RAW+JPEG mode).*
- XMP- sidecar file *(if it exists).*
- .rpps sidecar file *(if .rpps sidecar file recording is turned on).*
- .ORI file, if the current file has a .ORF extension and a .ORI file exists.

Deleting Files: the _Rejected folder

FastRawViewer doesn't allow one to delete files directly from the current folder. Instead, the files you intend to delete can be moved to a _Rejected subfolder, located in the current folder. This folder is created the first time a user requests that a file be moved to said folder. This is intentional, and exists to ensure that no shots are accidentally deleted:

- There are many situations when the system "trashbin" can't be used *(removable drives, network folders and drives)*; also, in certain cases the operational system may delete part of the content of the system trashbin *(for example, when the size of the trashbin is over the limit)* without even requesting confirmation from the user.
- Flash cards and card readers are prone to hardware malfunctions, and moving a file into a subfolder is the safest file operation.

To delete files, after you are sure nothing is in to the _Rejected folder, which shouldn't be *(the _Rejected folder can be browsed with FastRawViewer as any folder)*, you can use the Clear _Rejected Folder operation *(see below)*

By default, the _Rejected folder is a subfolder of the current folder *(i.e., each folder has its own **_Rejected** subfolder)*. In certain cases, this may be inconvenient. To address this, you can use a global _Rejected folder by changing the preferences in **Preferences – Copy/Move/Reject**:

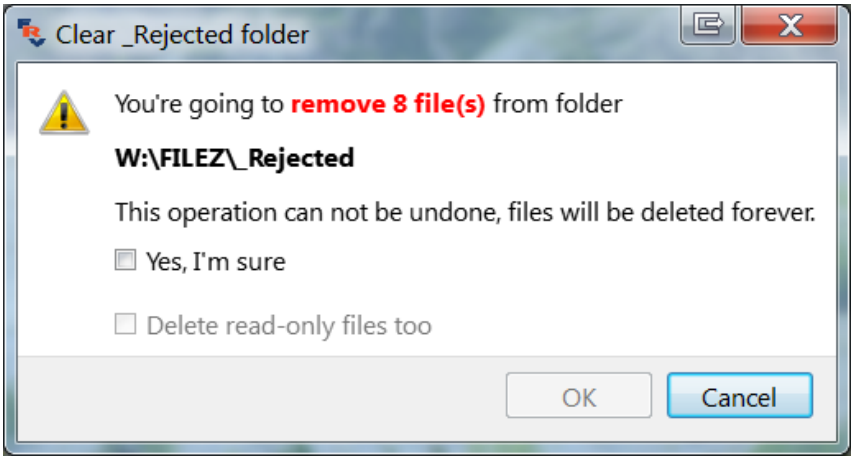
- Use global rejected folder – **Check**.
- Select the path for the **Global Rejected Folder**.

Clearing out the _Rejected Folder

To delete the contents of the _Rejected folder, use **Menu – File – Clear _Rejected folder**.

Clearing the folder with rejected files is irreversible, so

- You cannot set a hotkey for **the Clear _Rejected** action.
- When choosing this action, an additional, un-turn-off-able warning will be displayed:



The **OK** button will only be accessible after checking ***Yes, I'm sure*** *checkbox*.

The additional **Delete read-only files too** checkmark allows one to delete files with the Read-Only attribute; if this checkmark is not set then those files will be ignored and will remain in **_Rejected**.

Attention: Mac OS X does not support the Read-Only attribute on the FAT/exFAT systems, so on OS X the Read-Only checkmark will only work on local and network drives, but will not work *(i.e. checked on)* on removable media *(memory cards).*

Integration with External Programs

FastRawViewer can start external programs, passing them the current RAW file as a parameter. This way any program that takes the file name as a command line parameter can be launched, be it a RAW convertor, different image viewer, or whatever program you may need.

On the first run, **FastRawViewer** performs a search and automatically configures itself to use the following programs:

- RawDigger
- Adobe Photoshop
- Adobe Lightroom
- Raw Photo Processor
- Capture One
- DXO Optics Pro

If, on the first run, **FastRawViewer** was unable to find the program you need, it can be added to the list of external programs manually through **Preferences – External Editors**.

To launch an external program to process the currently displayed image you can use **Menu – File – Run – necessary program** or with press one of **R** for the first external program, **Alt-R** for the second, and **Ctrl-R** for the third.

Display of the current file in Windows Explorer *(on Windows)* /Finder *(on Mac)* can be done through **Menu – File – Show in Windows Explorer / - Reveal in Finder.** Default keyboard combination – **Ctrl-F**.

Metadata: Ratings, Labels, Title, and Description

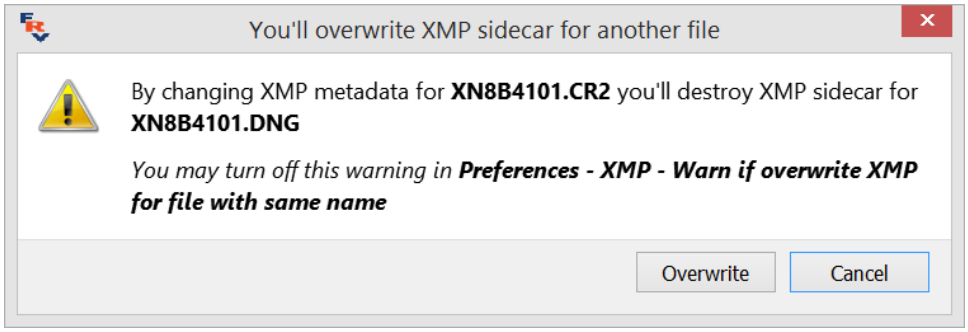
Creating and Reading XMP Files

FastRawViewer records all "changes" into separate sidecar XMP files *(analogous to Adobe Bridge).* The following can be saved/is read from these files:

- **Image orientation** *(see below, the "Changing Image Orientation" section).*
- **White Balance** in **FastRawViewer** and Adobe formats *(see below "White Balance").*
- **Exposure adjustment** in the **FastRawViewer** and Adobe formats *(see below, "Working with Exposure")*.

- **Ratings** and **marks** *(please see below).*
- **Title** *(title)* and **description** *(description)* of an image *(see below).*

If a folder contains files with the same name (for example, the source CR2 file and the result of its conversion to DNG), then, while recording an XMP file, a naming conflict may happen: it is necessary to record **filename.XMP** for **filename.CR2** file, but a **filename.XMP** already exists in the folder, for **filename.DNG** file. In this case, **FastRawViewer** will issue a warning:



To switch this warning off, unset the setting: **XMP - Warn if overwrite XMP for file with same name**.

If the default settings are in use:

- When the file is displayed in "Grid View" mode, the sidecar XMP files *(those having the same name as the current by with a .XMP extension)* are read.
- When the file data is changed, both XMP sidecar files and XMP blocks embedded into RAW files *(for those RAW file formats where such XMP blocks exist: DNG files mainly, but also some other formats)* are read, and the most recent XMP data is chosen using the modification date. Ratings and Labels in XMP blocks are ignored to ensure that the data displayed in "Grid View" mode and single file mode is the same.
- Only manual changes are recorded into XMP files *(for instance, image orientation or exposure are changed from automatic to something else).*

This behavior can be changed with the following settings:

- **Preferences – XMP – Use XMP for RAW Files** – turning off these settings leads to a complete disregard of XMP files: they are not read, written, and not moved together with RAW files.
- **Preferences – XMP – Read Only XMP –** blocks any recording of XMP files. Data *(ratings, labels, white balance, exposure correction)* will be read and used for display, but any changes to it will not be saved.
- **Preferences – XMP – Force XMP file creation** – turns on the creation of XMP files, even if nothing was changed manually. The parameters which were *(automatically)* set up when opening the file will be set as the parameters in the XMP file.
- The settings for reading embedded XMP blocks are described below in the *"Embedded XMP blocks"* section.

Exposure compensation and white balance are written to newly created XMP files according to the setting of Adobe Process Version in **Preferences – XMP – Adobe process version for newly created XMP files**.

To set color labeling scheme to be compatible with CaptureOne, set **Preferences – XMP – Write photoshop:Urgency tag with color labels (for PhaseOne C1)**. This setting turns on the recording of the XMP-tag photoshop:Urgency, which is used by CaptureOne to recognize and set color labels.

Compatibility with RawPhotoProcessor (.rpps files)

FastRawViewer can create basic .rpps *files (those contain conversion settings for RawPhotoProcessor)*.

The following parameters are recorded:

- Exposure compensation.
- White Balance.

This option is controlled through **Preferences – Other – Write RPPS files** checkbox. Another checkbox, **Preferences – Other – Force RPPS files creation**, forces the creation of .rpps files immediately after a RAW file is opened in **FastRawViewer**, with automatic exposure compensation and current white balance recorded as initial settings.

To import such .rpps files for further use, while in RawPhotoProcessor navigate to Menu - Settings - Import Multiple settings and select both RAW and .rpps files in the folder that you wish to process. The settings in .rpps files will be imported into RawPhotoProcessor History and the corresponding RAW files will be opened using the parameters you've set in .rpps files.

FastRawViewer behavior while creating or updating .rpps files:

1. If .rpps file exists, and exposure compensation and/or white balance are changed in FastRawViewer, the values for white balance and/or exposure are replaced in .rpps file with the new ones. Also, if **Force RPPS files creation** is checked, those values in .rpps file are replaced upon opening the raw file.
2. If .rpps file does not exist, and **Preferences - Other – RPPS files – RPPS Template** field points to some readable file, this template will be used to create specific .rpps file for the current raw file; once again, current FastRawViewer settings will be used for exposure compensation and / or white balance fields.

Ratings and Labels

FastRawViewer can set XMP ratings and XMP labels that are compatible with Adobe products *(and other programs which support XMP)*.

Ratings are set as a number from 1 to 5. The setting is changed via **Menu– XMP Metadata** or by pressing the 1…5 buttons in the **XMP Metadata** panel.

To clear the rating, please press [X] button in the upper row of the **XMP Metadata** panel, or you can also use **Menu – XMP Metadata – No Rating**.

For the compatibility with Adobe Bridge **FastRawViewer** supports Reject rating (-1). To enable this, set **Preferences – XMP – Use XMP Reject rating** to **ON** (this is also switched on automatically if **XML Label style: Adobe Bridge** is selected).
As the result, the button [R] is displayed in the row for setting the rating, and the action **Reject** appears in the Label menu.

Color labels are named with text, and 4 styles of labels are supported:

1. Adobe Bridge style *(Select, Second, Approved, Review, To Do).*
2. Adobe Lightroom style, color marks *(Red, Yellow, Green, Blue, Purple).*
3. Adobe Lightroom 'Review Status' style *(To Delete, Color Correction Needed, Good to Use, Retouching Needed, To Print).*
4. Custom user labels.

You can select the appropriate label style through **Preferences–XMP–XMP Label Style** section. For the Custom style you can also edit the names for the labels.

Setting and changing the label for the image is performed through **Menu– XMP Metadata** or by pressing the colored squares in the **XMP Metadata** panel. To delete the label, press the [X] button in the row for setting the label, or use **Menu – XMP Metadata – Clear Label**.

When turning on the Read Only XMP mode, labels are read from XMP files, but the program prevents any changes to them.

Embedded XMP blocks

Many RAW file formats can contain XMP blocks embedded in the file itself. In **FastRawViewer** they often can be treated as placeholders, since they contain just an empty label and a rating of zero, so there is no point in using these blocks. Moreover, the analysis of the metadata can be fairly time-consuming, especially when RAW files are located on a network drive or a slow HDD. For the aforementioned reasons, the analysis of embedded XMP blocks is, with default preferences, turned off – most users will get only a slow-down of their workflow and zero benefit.

However, in a few cases, these blocks can contain meaningful data, in particular:

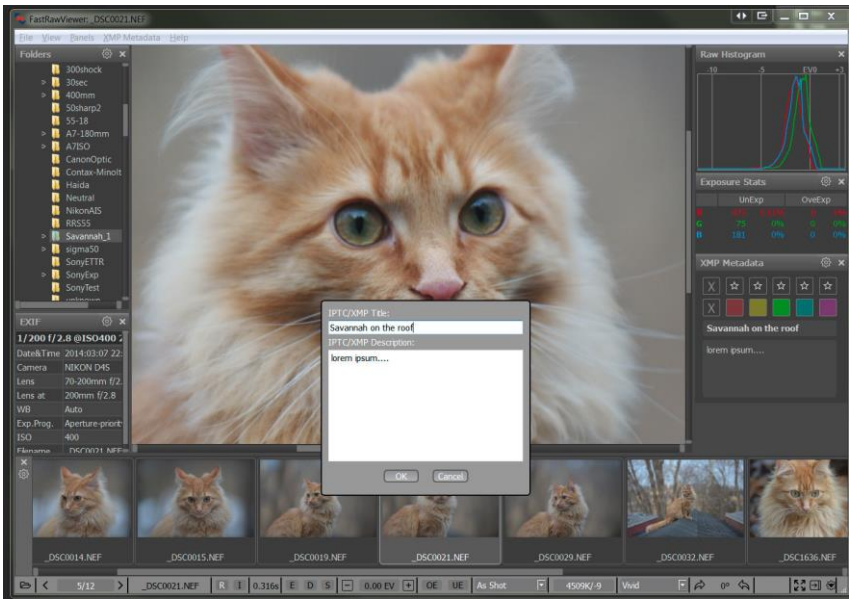
- When using the DNG format, and editing metadata using Adobe programs, the XMP data is recorded in the DNG file, not in separate XMP sidecar files.
- When setting ratings to images with the camera *(for example, Canon cameras can do this)*.
- Some cameras *(in particular, some Leica models)* assign all shots the "Red" label, probably so that the new *(unsorted)* images stand out immediately when looking at them in Lightroom.

In the aforementioned cases, it is recommended that one turn on **Preferences – XMP – Read ratings/labels from XMP blocks embedded into RAW files**.

Title and Description

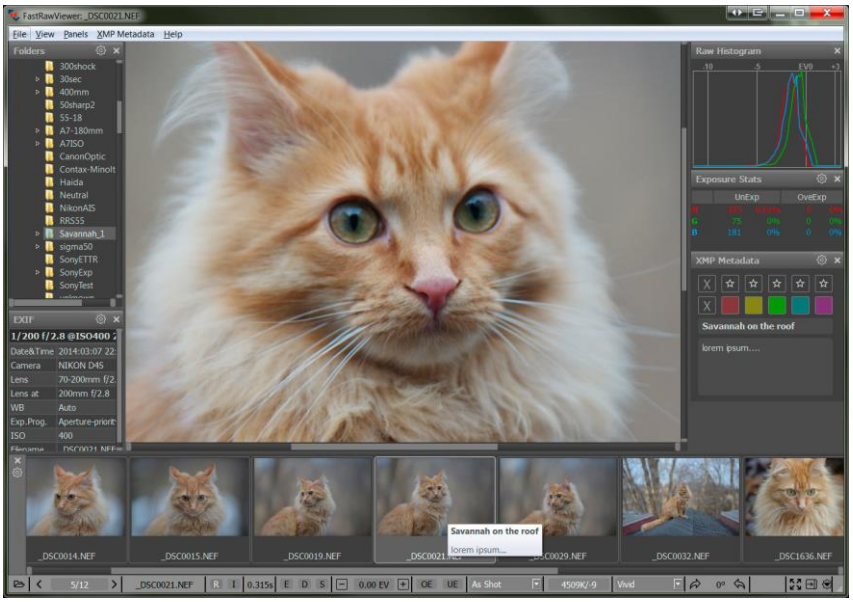
FastRawViewer can record the title and description of the image in XMP files.

To call up the editing dialog, use **Menu – Metadata – Edit Title/Description** or the corresponding macro *(Alt-D),* or double-click on the title or description field in the XMP Metadata panel; this summons the editing dialog:



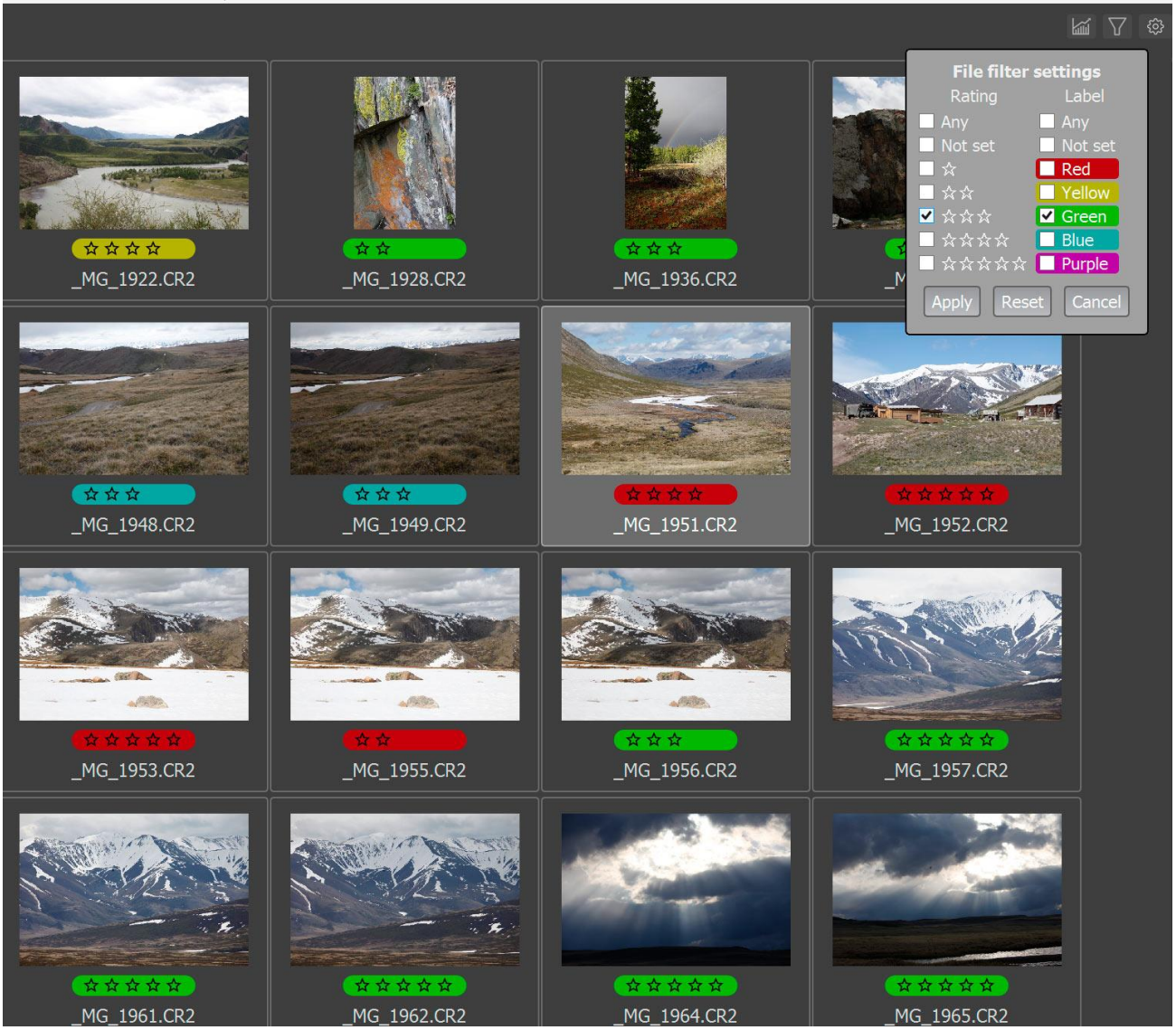
After editing the name and description they are shown in:

1. The floating tooltip in the **Filmstrip/Thumbnails** panel.
2. The **XMP Metadata** panel:



Filtering Files Using Labels and Ratings

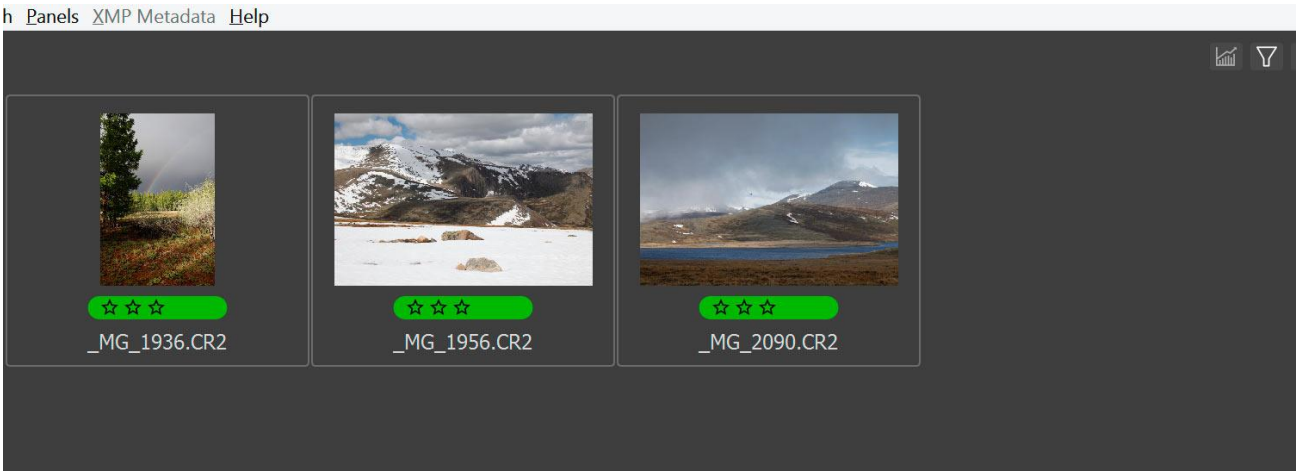
This can be accomplished using **Menu – File – Filter files by rating/label** or by clicking the "funnel" icon (▽) on the **Filmstrip** and **Grid** panels:



When this menu item is selected or the funnel icon is clicked, the dialog to set the filtration parameters is activated. In this dialog, you can set:

- The desired XMP-rating *("any" or some combination of ratings)*
- The desired XMP-label

After the **Apply** button is pressed, the Thumbnails and Grid View will keep displaying only those images that pass the filtration criteria.



When the filtration is on, the funnel icon is displayed brighter.

When filtration is activated in the current folder for the first time, the program will read all of the XMP files in the folder and store their ratings and labels. If for the files in the current folder the ratings and/or labels are changed with an external program, while the folder is opened in FastRawViewer, to re-read the XMP files you can use the "gear" button for the Filmstrip/Grid View, selecting **Refresh thumbnails/ratings**.

With standard settings the labels and ratings are read only from sidecar XMP files. However, in certain cases the XMP data can be embedded right into the RAW files. To use those embedded XMP blocks for file filtration, you need to switch on the setting in **Preferences – XMP – Read ratings/labels from XMP blocks embedded into RAW files**. This is described in more detail in the *"Embedded XMP blocks"* section, in the *"Ratings and Labels"* chapter.

Operations with Multiple Files

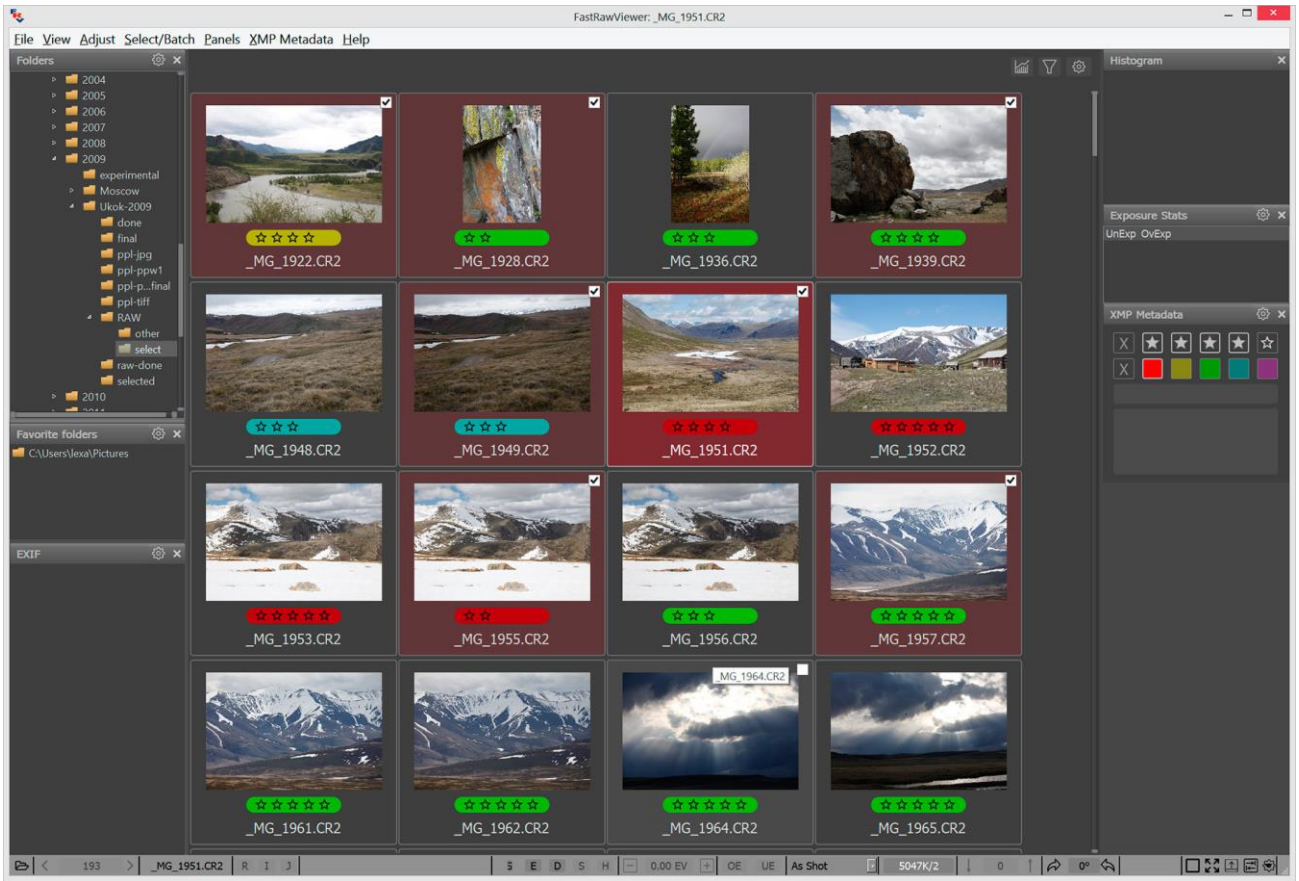
To mark a file for group operations in **Grid View** *(or in the Filmstrip)*, you can do one of the following:

- **Ctrl-Click** on the file preview thumbnail.
- Set a **checkmark in a checkbox** in the upper-right corner of the preview thumbnail *(the checkbox appears for the files that are currently unmarked when you hover a mouse over its preview; the checkbox is permanently visible for those files which are already marked).*
- **Shift-Click** in Grid View/Filmstrip selects a consecutive group of images:
    - the images selected start from the last one whose selection status was changed (using Ctrl-Click or the keyboard), and go up to the one that was Shift-Click'ed
    - if there is no image whose selection status was changed (like it is in the cases when the file was moved, or a new working folder was selected), the Shift-Click operation

uses the first file instead; the selected range starts with the first file and goes to the one that was Shift-Click'ed

- Through the actions in **Menu – Select/Batch**
  - **(De)select current file** – reverses the mark status.
  - **(De)select and move to next** – reverses the mark status and navigates to the next file.
  - **Select All**, **Invert Selection**, **Deselect All**.
  - **Select by Rating/Label** – marks files based on their labels/ratings.
  - **Save Selection to file** – saves the list of marked files to a text file on the disc.
  - **Load/Append selection from file** – loads the list of marked files from the previous bullet and marks the corresponding files for the load operation or adds to the list of the currently-marked files for the append operation.

The previews of the marked files have a different background color:



This color can be changed through **Preferences – Interface – Selected files background**.

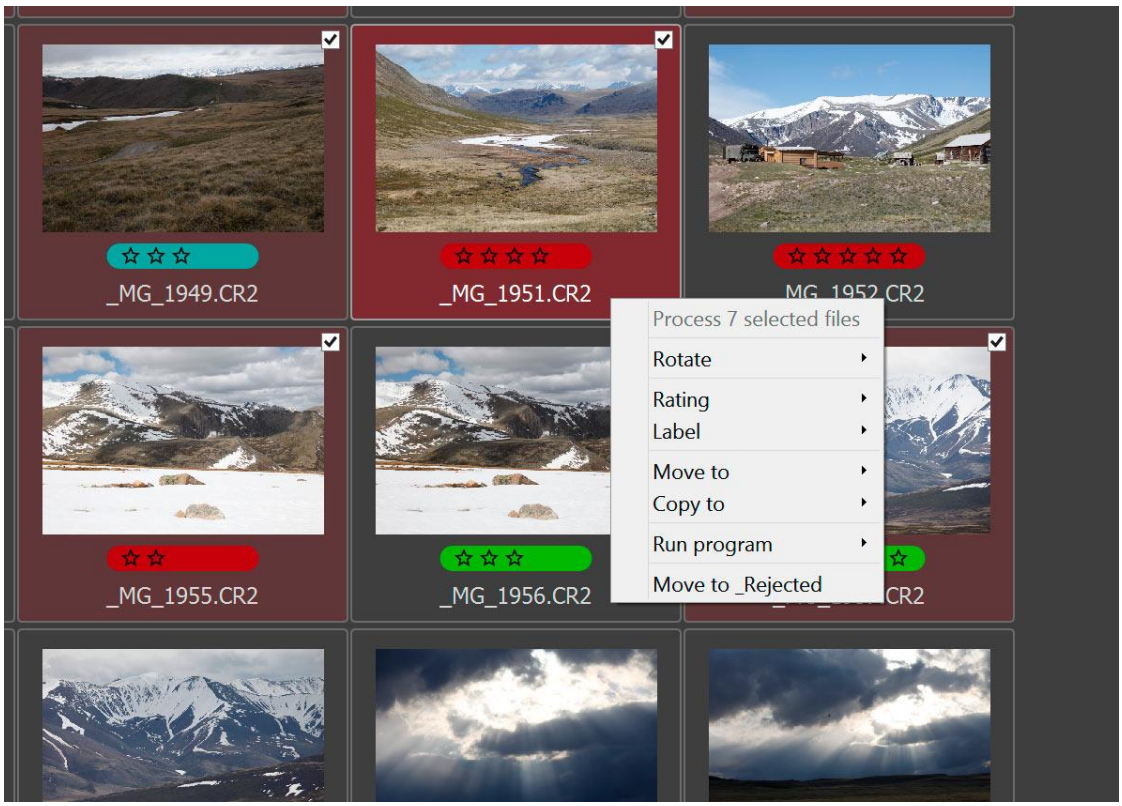
With a group of marked files, one can preform all of the operations that can be done with a single file:

- Changing orientation.

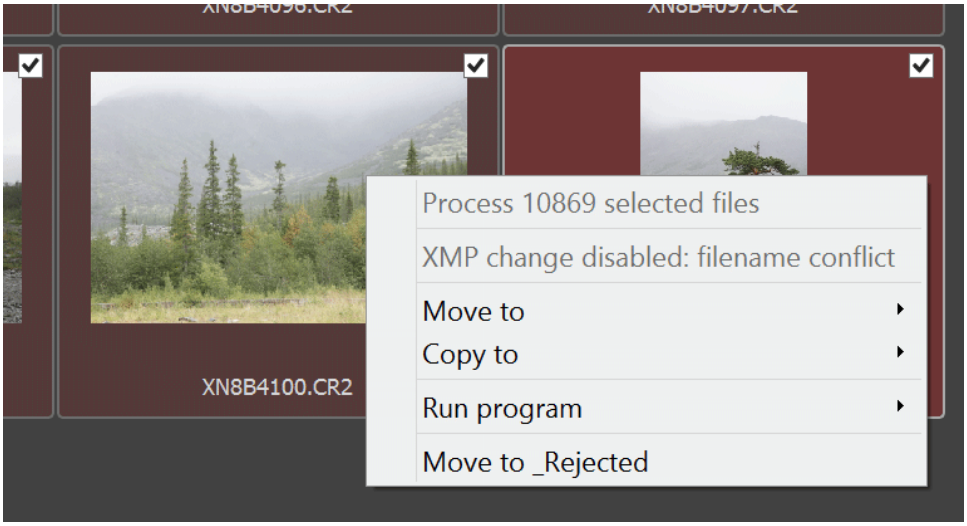
- Settings labels and ratings.
- Copying to another folder.
- Moving to another folder.
- Passing to an external program.
- "Deleting" *(moving)* to the _Rejected subfolder.

To perform these actions, you can use the corresponding menu items either from

- **Menu – Select/Batch menu**.
- **Context** menu *(activated by right-clicking on any of the marked files):*



If some files with the same name (but different extensions, such as CR2 / DNG pair) are highlighted, then the operations to change the orientation or to change / set ratings or labels will be disabled: it is impossible to apply such operations over a pair of files files with the same name and different extensions, because for such a pair only one XMP file can exist:



To allow XMP operations, disable the setting "XMP settings - Disable batch XMP operations if files with same name are selected". If it is turned off, the XMP files will be created for all selected files, but because of the name conflict only the last recorded file will contain actual data.

Undo: Reversing File Operations

The **Menu – File – Undo** can reverse the last file operation *(in reverse order of their completion)*.

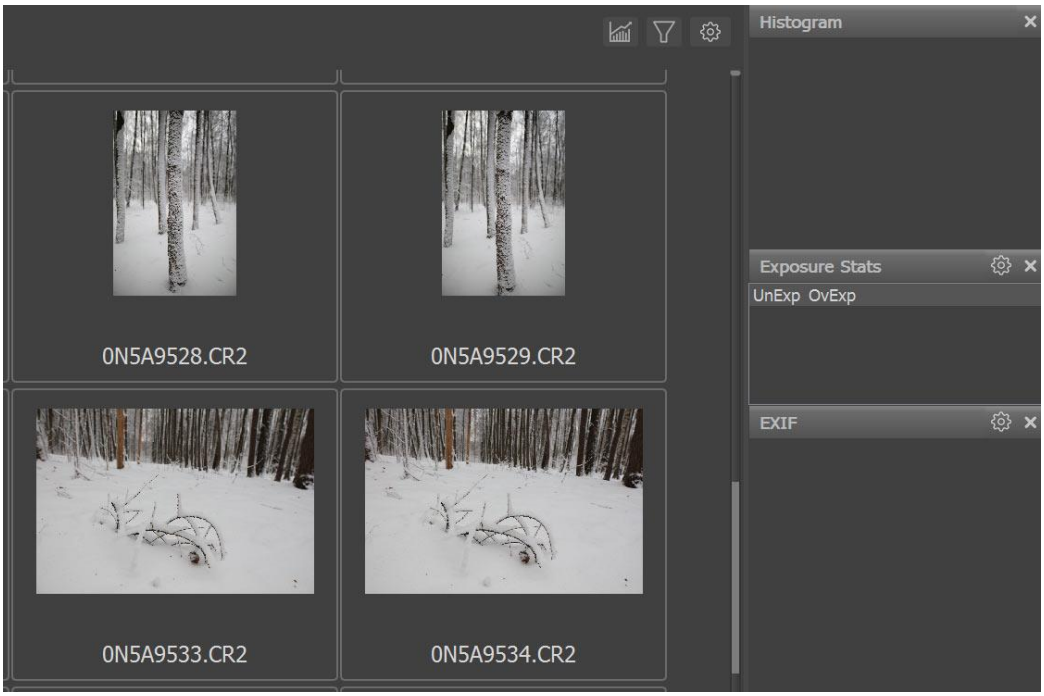
The undo is possible for:

- Setting a rating and/or label;
- Copy operation;
- Move operation;
- Moving to a _Rejected subfolder *("deletion").*

It is also possible to undo the rotation of the group of marked files *(there is no undo for the rotation of a single file – you can simply rotate it back)*.

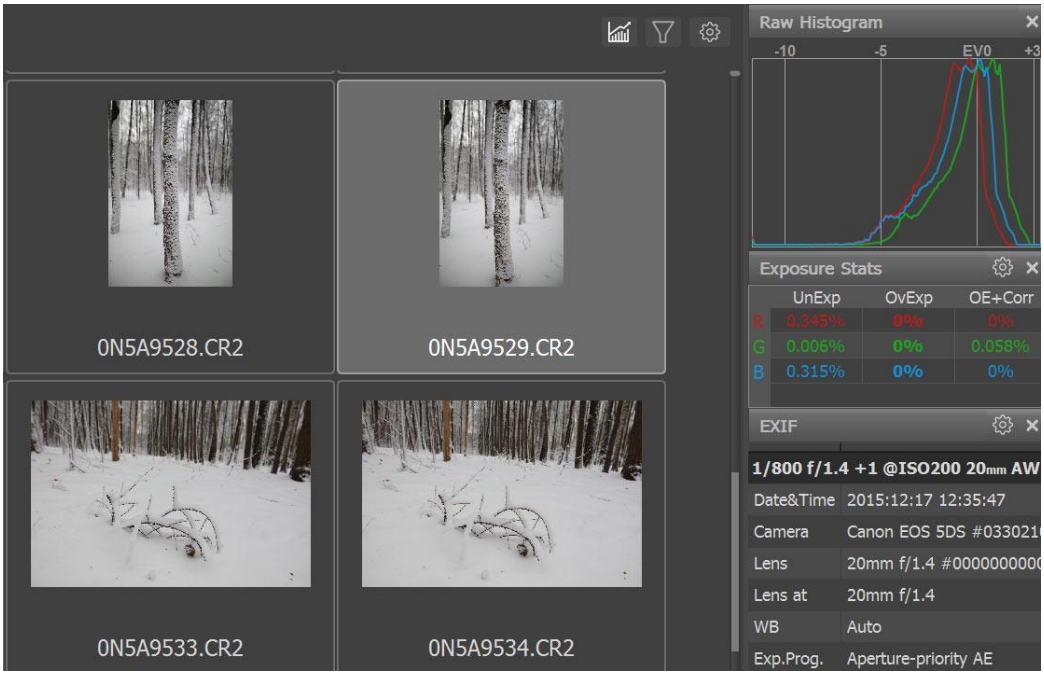
EXIF, Histogram, and Exposure statistics in Grid Mode

The defaults for the **Grid** mode are optimized for speed. Only preview and XMP-data are read for a file, the decoding of the RAW data is not preformed. Thus, the **Histogram**, **Exposure Statistics**, and **EXIF Data** panels remain empty:

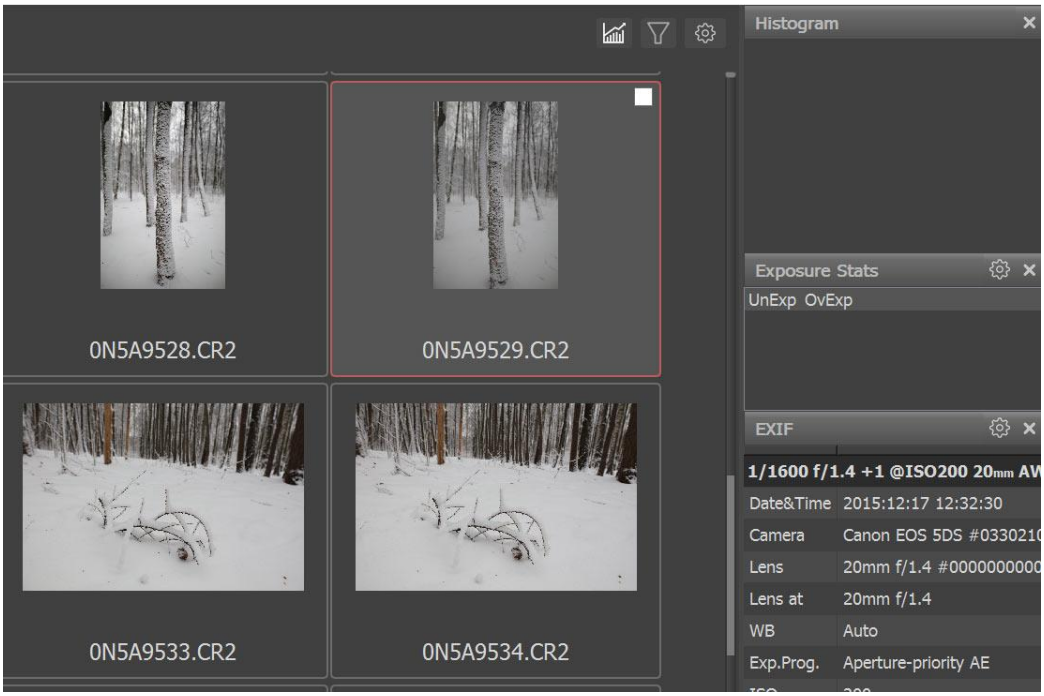


To switch decoding of RAW data on, press the “statistics” (📊) button in the upper-right corner of the Grid mode display window.

When you click this icon, it brightens up and the decoding of the RAW data is turned on, thus enabling the display of the **Histogram**, **Statistics**, and **EXIF data**:

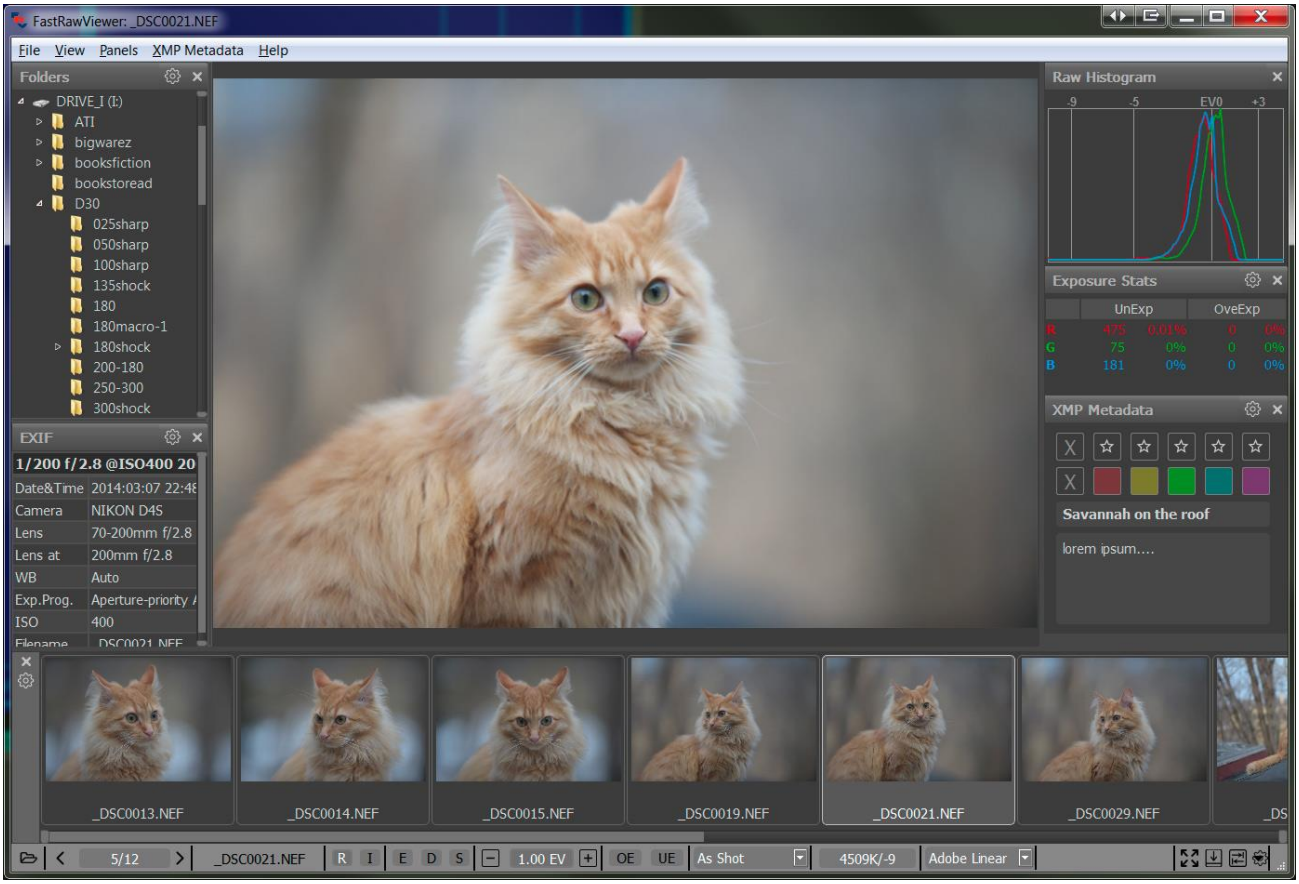


RAW data decoding takes some time; during the decoding the active file *(for which the RAW data is read and decoded)* is highlighted with a red frame:



Folder Navigation

Folders can be navigated via the **Folders** panel, the standard location of which is to the left of the main program window:

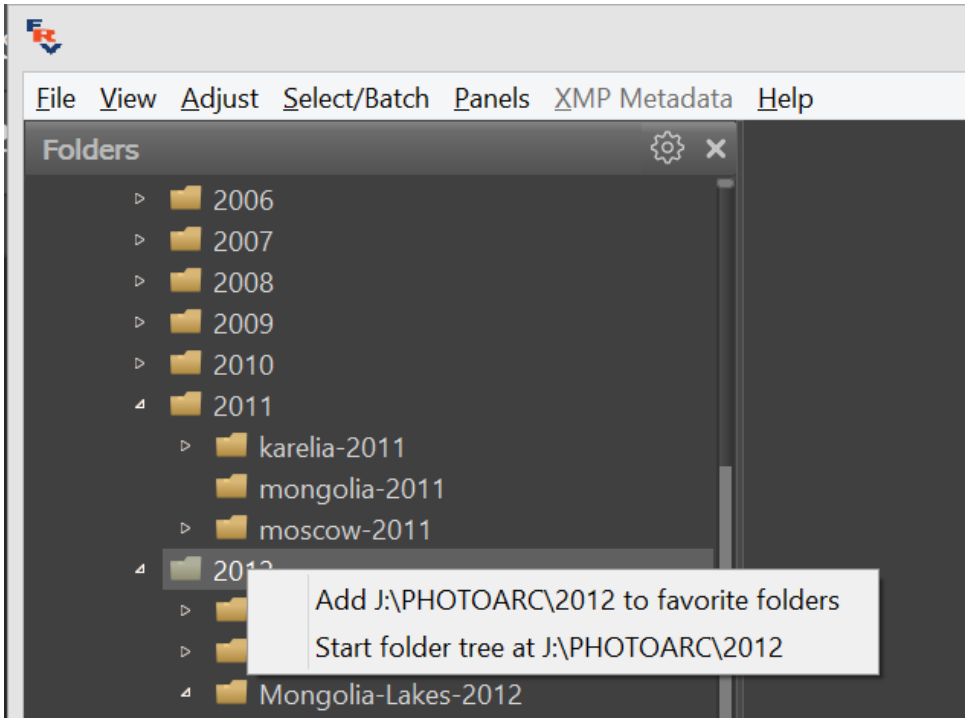


The folders can be navigated with the:

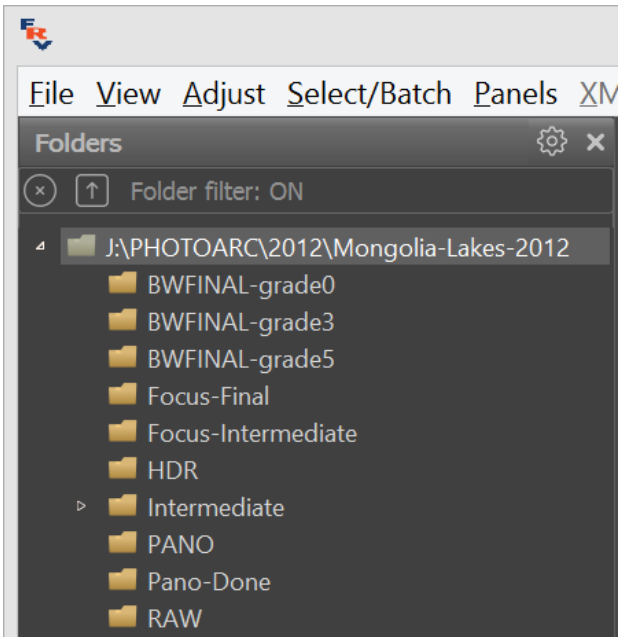
1. Mouse:
    a. Clicking on the triangle to the left of the folder name opens the subfolder tree. A second click on the triangle closes the subfolder tree.
    b. Clicking once on the folder name loads the first preview in the Filmstrip panel.
    c. A double-clock on the folder name loads the first preview and opens the first file of the folder in the main program window.
2. Keyboard:
    a. The up/down arrows, PgUp/PgDn keys, and Home-End move across the list while loading the previews into the Filmstrip.
    b. Right/Left arrows open/close subfolders.
    c. Enter loads previews and opens the first file in the folder.

Limiting the displayed folder tree

Upon right-clicking on a folder in the Folders panel, the following context menu appears:



Upon choosing **Start folder tree at *folder name***, that folder will serve as the root of the folder tree, with its subfolders also being displayed:



Also, an informational panel appears at the top of the tree with two icons and a **Folder filter: ON** message. The buttons/icons work in the following manner:

- (x) – turns off the filtration, and displays the entire folder tree again.
- [↑] –moves the "root" of the filtration one level up.

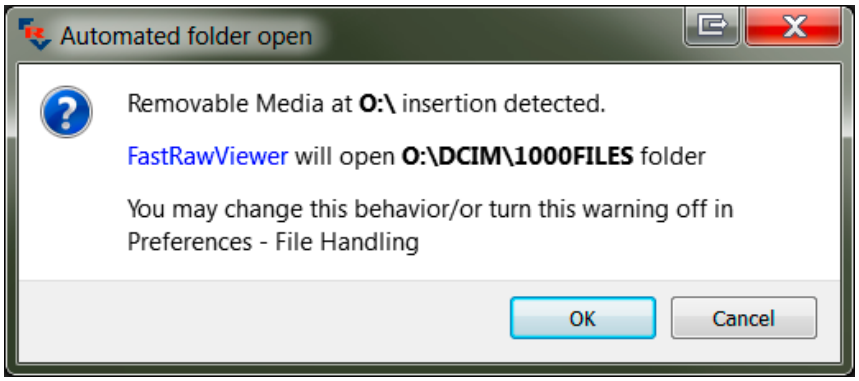
Furthermore, the folder filtration will cease when opening a file or a folder outside of the current ***tree branch*** (for example, when opening something through File-Open or by Drag-and-Dropping something into the program window).

With default settings, folder filtration is not re-applied when re-launching the program. This can be changed by turning off **File Handling – Startup – Reset folder tree filtering on start**.

Working with Removable Media (Flash Cards, etc.)

Automatic Recognition of Inserted Media

Under default settings, **FastRawViewer** recognizes the removable media *(memory card, USB flash drive)*, and, having recognized it, shows the following dialog:



*"Removable Media insertion detected, **FastRawViewer** will open the newest folder found on it under the DCIM folder".*

The action resulting from detecting removable media can be changed in **Preferences – Removable Media** to one of the following variants:

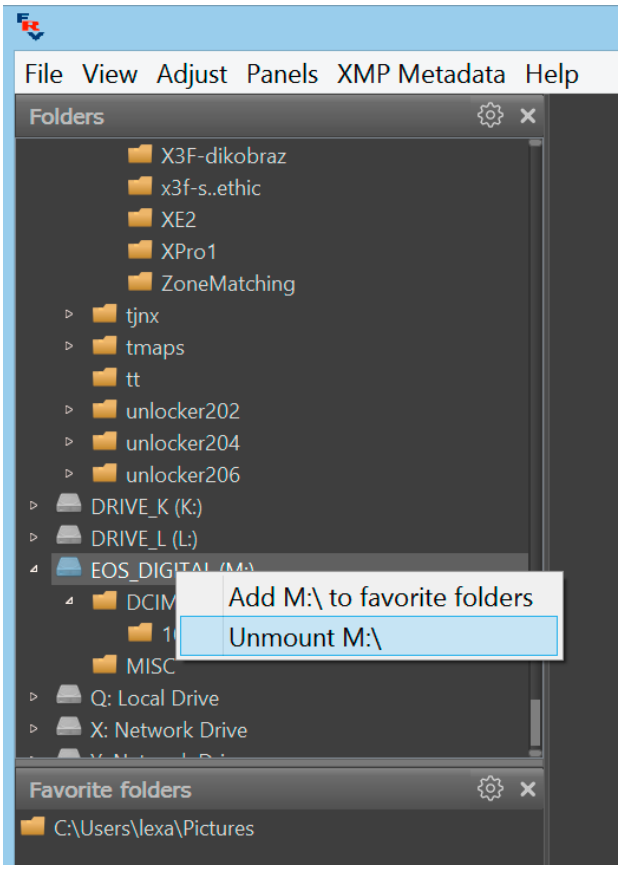
- Do nothing *(Do nothing);*
- Open predetermined folder *(by default, \DCIM);*
- Opens the most recent *(by date of modification)* folder in the predetermined folder.

You can also turn off the above-shown warning in the same **Preferences** section.

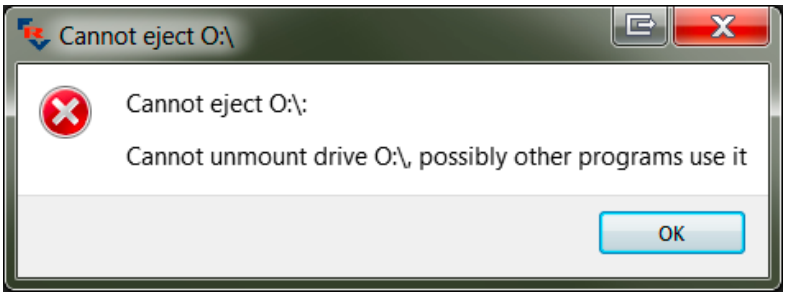
Un-mounting (Ejecting) Removable Media

If the removable media doesn't use any application except **FastRawViewer**, then it can be ejected without closing the program.

For this, one needs to right-click the respective media icon in the Folders panel and to select in the context menu the *(only)* item, **Unmount MediaName:**



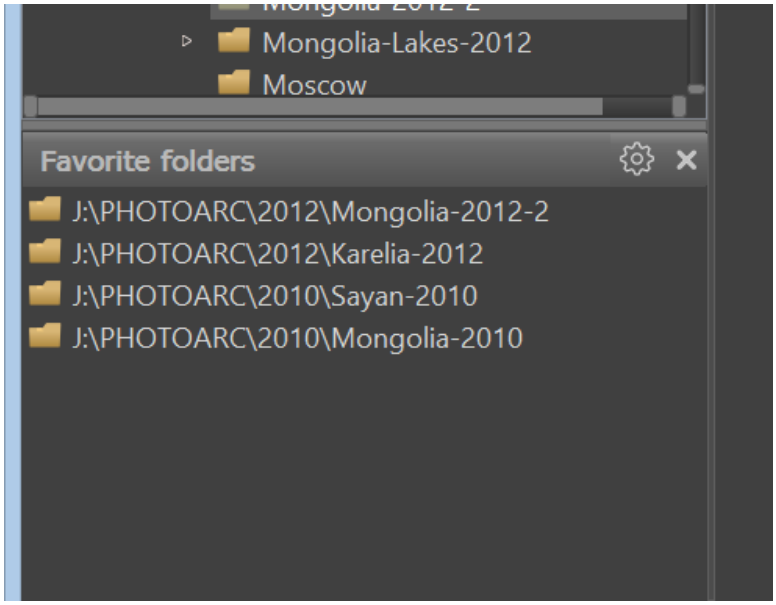
After a successful un-mount, the media will be freed up without additional messages. If there are any problems, then the following error message will be displayed:



This message means that the removable media is in use by some other program as well, and **FastRawViewer** cannot safely un-mount it.

Favorite Folders Panel: Easy Access to Select Folders

An additional **Favorite Folders** panel can be found at the bottom of the **Folders** panel. **Favorite Folders** panel is intended to be used to store a list of select folders in the file system, for easy and fast access.

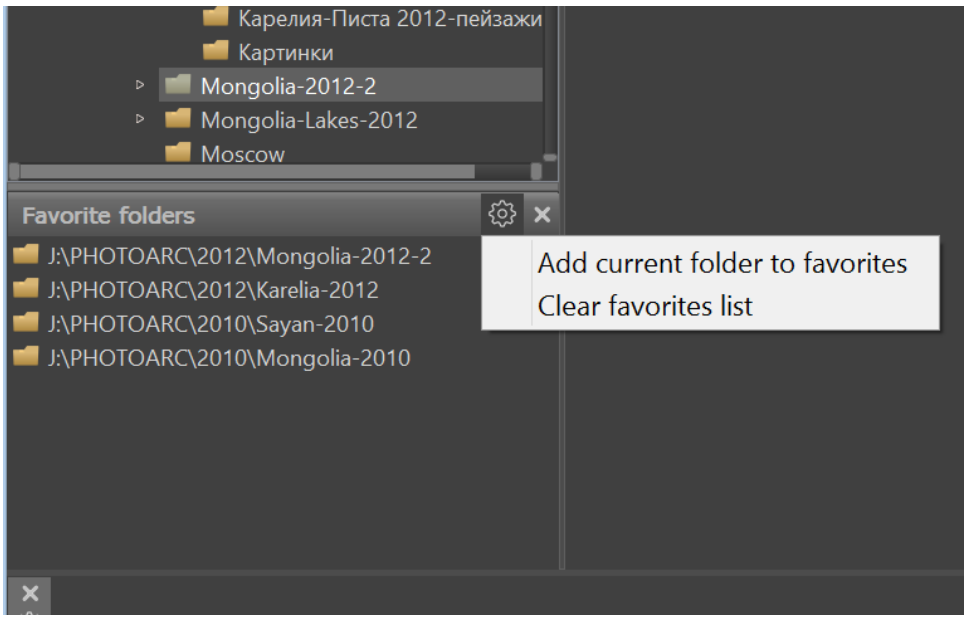


The "behavior" of the elements in this panel is analogous to that of the **Folders** panels:

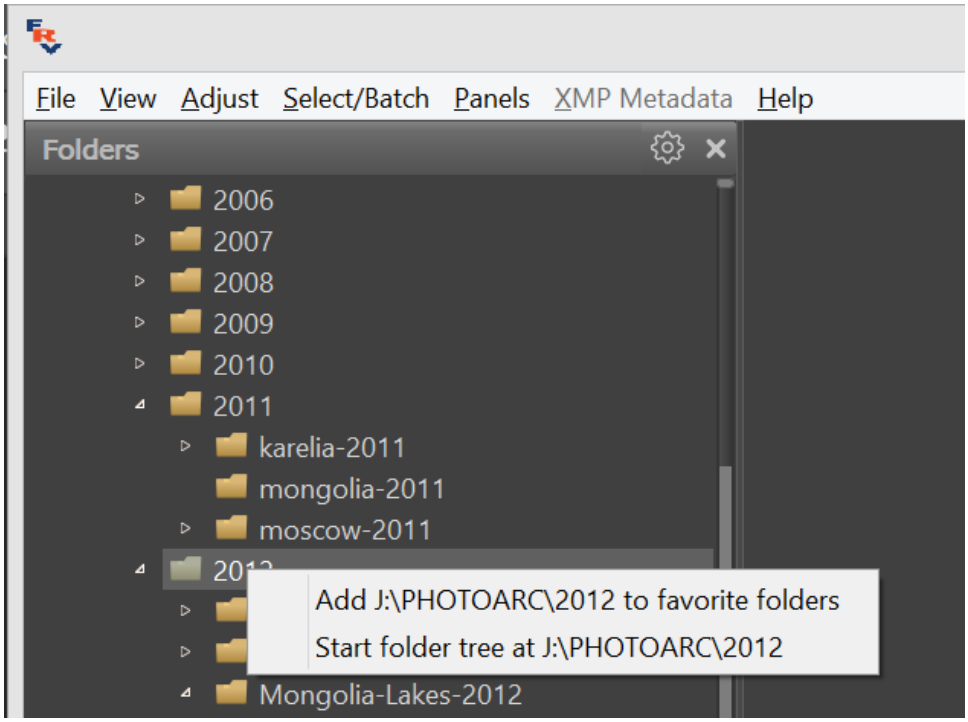
- **One click**: the Thumbnails panel will be populated with the previews of the files in the chosen folder.
- **Double-click**: opens the first file in the folder.

You can add to the **Favorite Folders** list in two ways:

1. The **Favorite Folders** panel's menu *(the "gear" icon at the head of the panel),* **Add current folder to favorites** adds the current panel to the list of favorites.

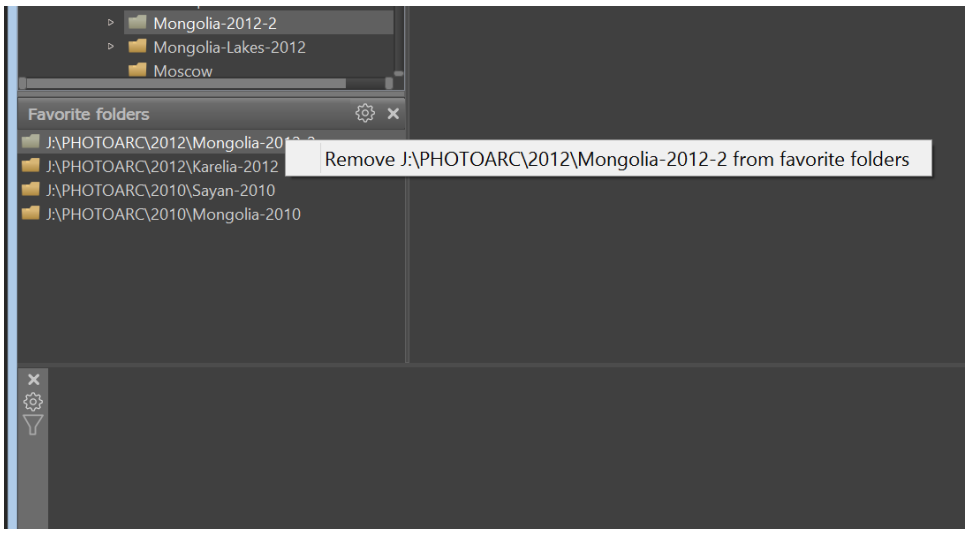
2. 

3. The context menu in the Folders panel allows you to do the same with a chosen folder (Add *folder name* to favorite folders):



Clearing the list:

1. Panel menu: **Clear favorites list** *(see above)* clears the entire list.
2. The context menu for a single item on the list allows you to delete that one item:



"Close" File/Folder

FastRawViewer background process scans files and receives system signals upon folder updates. This prevents safe ejecting of removable media, including flash memory cards and cameras connected to the computer via a cable.

Menu – File – Close File *(or **Ctrl-U**)* «closes» the currently opened file:

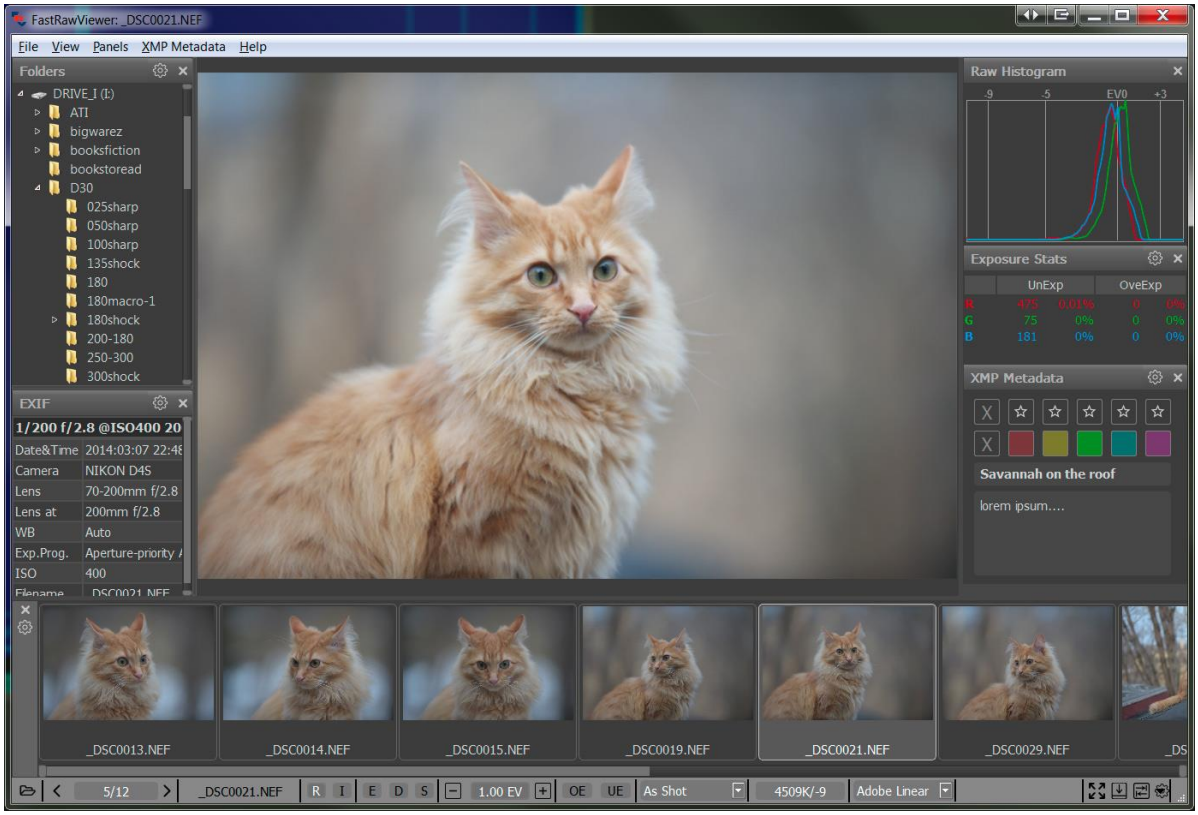
- All background processes are stopped as fast as possible.
- The monitoring of the current folder is cancelled.
- The current file display is cancelled.
- The current / working folder is changed to %HOME%/Pictures, or, if that one is not present, to %HOME%.
- Upon the completion of the **Close File** command the removable media can be safely un-mounted and ejected, as usual.

Un-mounting a portable media through the context menu in the Folder panel automatically preforms the **Close File** action.

Single File View Mode and the Filmstrip Panel

When activating one of the files in the **Grid View** mode *(**double-click,** press **Enter** on the file, **Menu – View – Switch to single image**)* the program switches to **Single File View** mode.

With default settings, the **Filmstrip** panel appears under the main window. The **Filmstrip** panel contains the thumbnail previews of the files in the current folder:



When choosing a file from this panel *(using the mouse, arrowkeys on the keyboard, Menu – File – Next/Prev File and Last/First file)* the selected file is displayed in the main window, and the controls of exposure, white balance, and contrast will act over this active RAW file *(see below the "Working with a single image" section)*.

You can use the same file operations in the filmstrip as those described previously for the Grid View mode:

- Copy, move, move to _Rejected;
- Editing metadata *(ratings, labels, title and description);*
- Orientation;
- Passing the file to external programs;
- Selecting a group of files and group file operations *(copying, moving, labels, ratings, passing to external programs)* is also possible.

Additional Methods of Navigating Folder Files

Aside from visual navigation through folders and files, **FastRawViewer** also supports additional methods of opening files or folders.

Opening a File/Folder Using the Menu

To open a file, you can use one of the following:

- **Menu – File – Open** (or **Ctrl-O**).
- Through the list of recently opened files (**Menu – File – Recent Files**).
- Drag-n-Drop the file onto the program icon.
- Drag-n-Drop the file onto the program window.

A folder *(catalogue)* can be opened in similar ways:

- **Menu – File – Open Folder** (**Ctrl-Shift-O**).
- **Menu – File – Recent Folders** – a list of recently visited folders.
- Drag-n-Drop folders onto the icon of the program.
- Drag-n-Drop folders onto the program window.

When opening a folder:

- With default settings the first *(in alphabetical order)* RAW or JPEG file in the folder is displayed.

Drag and Drop

Files and Folders can be "dropped" onto the window of the program, as well as on the icon on the desktop or the OS X Dock. If so:

1. If you dropped several files, then the first one opens *(the order is follows the order of the file selection in the file manager)*. All others will be ignored.
2. If you dropped several folders, then the first one opens. The others will be ignored.
3. If you dropped a mix of files and folders, then the first folder will be opened, while the separate files will be ignored.

Mac OS X: it is recommended that files/folders *(if there are a lot of them)* be dropped on the opened window, rather than the icon; this way it works a lot faster.

Program Start Modes

During the launch of **FastRawViewer**, one can additionally pass a filename or a folder to the program through one of the following methods:

- A RAW or JPEG file can be opened through the **Open With** menu, accessible through the right-click in the Windows Explorer/OS X Finder.
- **FastRawViewer** can be installed as a "default" program *(through Set Default Program in Windows or Get Info – Open With – Change All for Mac OS X)* – in this case **FastRawViewer** will start when double-clicking on any file of the associated type.
- Drag-Drop of a file or a folder onto the **FastRawViewer** program icon.
- Start using the command line.

The same as with Dragging and Dropping into the program window *(see above),* the first file/folder will be opened.

Launching Several Instances of FastRawViewer

Mac OS X: a single instance of the program is started. Second click on the icon in Applications, or drag-n-drop of the file or folder on the application icon activates the already started instance of the application.

You can start a second instance of **FastRawViewer** through the Terminal Utility with the command `/Applications/FastRawViewer.app/Contents/MacOS/FastRawViewer`

Windows: Several instances of the program can be started by (double-)clicking the icon or performing a drag-n-drop operation. With the start of each instance, a new window *(displaying a new file, if started with a drag-n-drop operation)* will be opened.

If you prefer to use "single instance" mode in Windows, you may do so by switching on **Preferences – Other – Run single program instance** setting. While this setting is on: clicking on a file, which is associated with **FastRawViewer**, will result in displaying the file in the existing program window.

Starting without a Filename

If **FastRawViewer** is started without a filename to view *(like with double-clicking on the program icon)* and the settings under **Preferences – File Handling – Start without filename are at defaults** no RAW file will be initially opened. To change this default behavior, please go to **Preferences – File Handling – Start without filename**:

- **Empty Screen** – **FastRawViewer** starts up "without file".
- **Last opened file** – opens the top *(last)* file from the Recent Files list.
- **Last visited folder** – opens the folder from the list of Recent Folders *(from this folder opens either the first file, corresponding to the current file sorting settings, or the last opened, if the 'Remember last opened file in folder' is set).*
- **Specified folder** – allows you to set a "start folder".

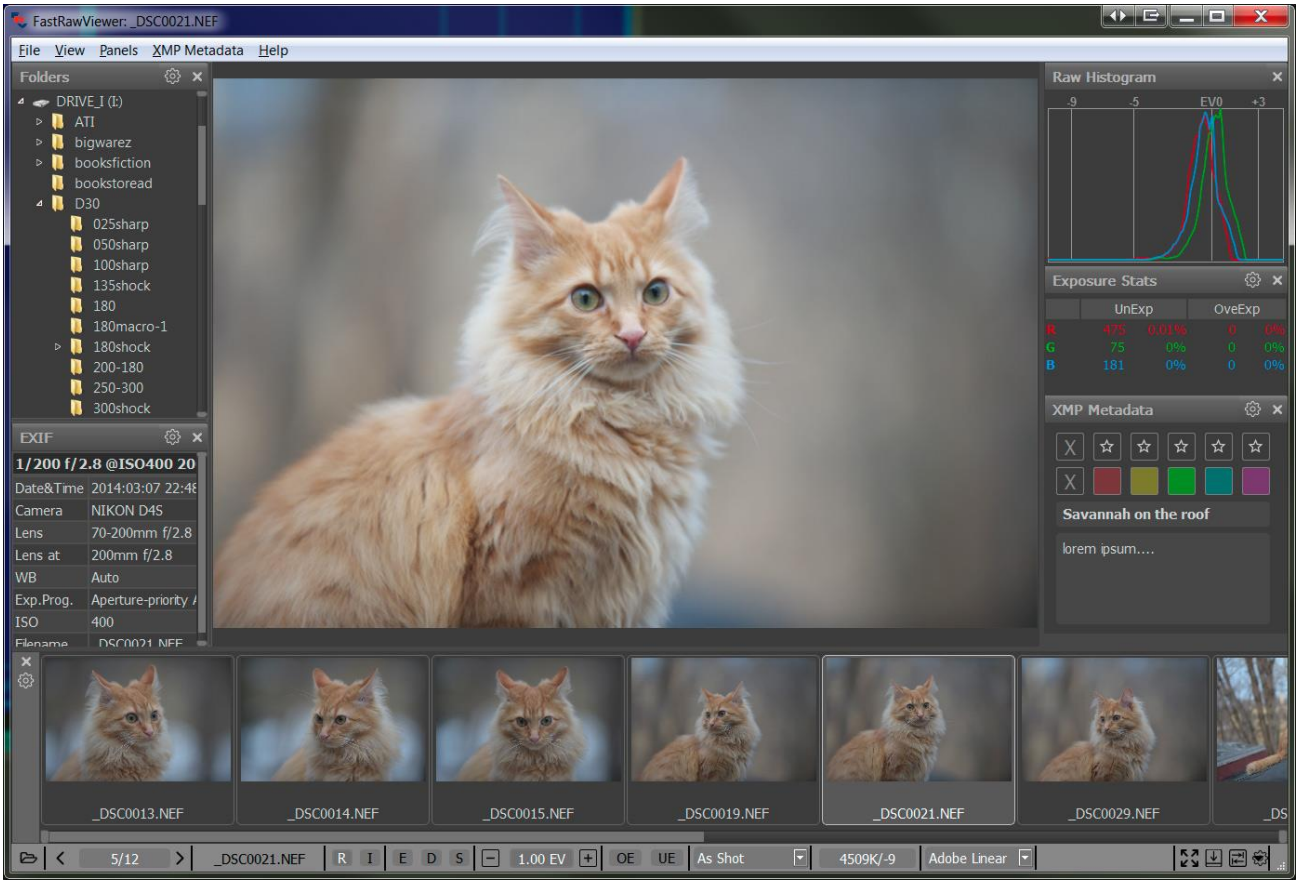
In the case of **FastRawViewer** being started up over a particular file *(through any method; drag-n-drop on the icon, clicking on the file, associated with **FastRawViewer**),* this setting is, of course, ignored.

This setting is also ignored in the Single instance mode, if the second **FastRawViewer** copy is started up without selecting the name of a file/folder, then nothing happens.

Under default settings, **FastRawViewer** doesn't "recall" files/folders from portable and network media. This behavior can be changed by un-checking **Preferences – File Handling – Do not recall removable media on startup**.

Working with a Single Image

In single image display mode, **FastRawViewer** displays the image in the main window, while the auxiliary data *(EXIF, histogram, exposure statistics, XMP-data)* are displayed in additional panels:

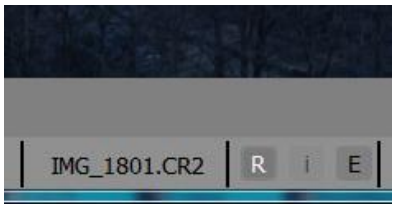


Embedded and External JPEG

For every file, there can be up to three “representations”:

- RAW file.
- Embedded JPEG preview *(Internal JPEG).*
- External JPEG file with the same name *(if the setting **Preferences – RAW+JPEG – Handle RAW+JPEG together** is on).*

The existence of representation is displayed in the status *(lower)* bar of the program, between the file dimensions in pixels and the EXIF data:



- **R I** – denotes the existence of RAW and Internal JPEG.
- **R I E** – RAW, Internal JPEG, External JPEG.
- **J** – only JPEG, without a RAW-file.

A capital letter indicates that the representation is available for viewing. Lowercase means that it exists, but is unavailable for viewing for one of the following reasons:

- **i** – the internal JPEG is not shown. This is a default setting for when there is an internal JPEG file and the RAW+JPEG mode is on *(can be changed in settings: **Preferences – RAW+JPEG – Do not show internal JPEG if external JPEG is present**).*
- **r** – RAW representation is not shown. This happens for unsupported RAW formats *(Sigma Foveon)* or for too large RAW files *(limits can be changed in **Preferences – Performance – RAW file size limit**)*.
- File representation is damaged *(errors while decoding of JPEG or RAW data)*.

To switch between representation use **Menu – View – Switch RAW/intJPEG/extJPEG** or press the **J** key on the keyboard. The representation that is currently displayed is denoted with letter indicator going white.

Tuning the behavior of the program in regards to the display of embedded/external JPEG files is done through **Preferences – RAW+JPEG**.

- **Handle RAW+JPEG together** – turns on the pairing of the RAW file and JPEG of the same name. If you turn off this setting, the pairing won't happen – the files will be shown separately and treated as separate.
  - **Do not show internal JPEG if external JPEG is present** – disables decoding and displaying of an embedded JPEG when there is an external one.
  - **Do not show external JPEGs** – disables the decoding and displaying of external JPEGs *(still, both RAW and JPEG files will be relocated with a move operation).*
- **Ignore internal JPEGs –** disables any processing of embedded JPEGs in all Handle RAW+JPEG modes.
- **Default image to Display** *(same as Previous/RAW/internal JPEG/external JPEG)* – controls what representation will be used for display when opening the next file.

Zooming and Panning

To change the zoom level of the displayed image, you can use the following commands available through **Menu - View** and also through the keyboard shortcuts:

- **Menu – View – Zoom In** or **Ctrl-+** – magnifies the image on the display.
- **Menu – View – Zoom Out** or **Ctrl—(Ctrl-Minus)** – zooms out.
- **Menu – View – Fit to Window** or **Ctrl-0** – changes the zoom factor in such a manner that the image fits into the current size of the window *(and when changing the size of the window, the magnification factor will follow)*.
- **Menu – View – Actual Pixels (100%)** or **Ctrl-1** – set the image scale to "100%" *(each image pixel is displayed as one monitor pixel)*.
- **Menu – View – Toggle Zoom** or **Z** – toggles zoom level between the setting in Preferences and the current zoom level. In more detail,
    - If the current Zoom level is less than the value of the "**Toggle Zoom" Zoom to** setting *(this value is 100% by default)*, then the current zoom/magnification value will be stored and the image will be magnified/zoomed up to this value *(again, to 100% for the defaults)*.
    - If the current magnification/zoom value is greater or equal than the value of the "**Toggle Zoom" Zoom to** setting, then
        - If there is a stored zoom value from a previous use of **Toggle Zoom,** the zoom level returns to that stored value.
        - If there is no stored value yet, it switches to the **Fit to Screen** mode.

If the image does not completely fit into the window:

- **Pressing and holding the left mouse button** turns on the Drag mode: the image moves with the mouse cursor.
- **Pressing and holding the right mouse button** turns on the fast panning mode: the program window becomes 'Navigation Pane', moving the mouse, for instance, to the top-right corner of the window will show you the top-right region of the image.

Furthermore, the fast combined "***Zoom + Panning***" modes are available as well:

- **Left mouse button + Shift –** turns on temporary zoom and Drag mode.
- **Right mouse button + Shift –** turns on temporary zoom and panning mode.

The zoom factor for these modes is set in the **Preferences-Zoom** section:

- **Interface – 'Zoom and Drag'** zoom to.
- **Interface – 'Zoom and Pan'** zoom to.
- **Interface – 'Toggle Zoom' zoom to**.

Changing Image Orientation

When you open the image, its orientation is calculated from the XMP file (if it exists), or from the EXIF data and the image is rotated accordingly.

- **Menu – Adjust – Rotate 90^0 CCW** *(or **Ctrl-7**)* – turns the image 90 degrees counter-clockwise.
- **Menu – Adjust – Rotate 90^0 CW** (or **Ctrl-9**) – turns the image 90 degrees clockwise.

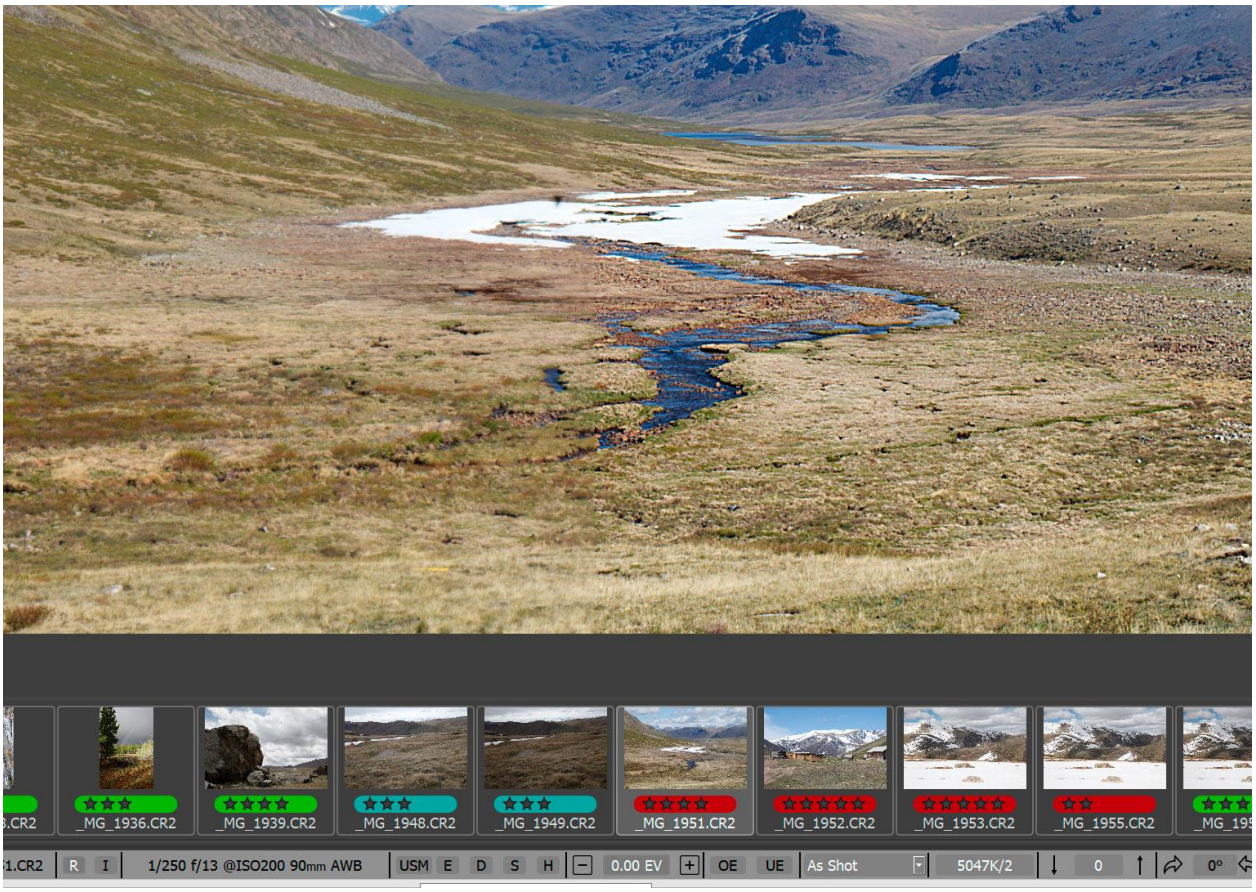
The orientation changes are recorded in an XMP-file.

Sharpening for Display

While being processed in a RAW converter, RAW images generally have had some sort of sharpening algorithm applied to them *(this is true for both out-of-camera JPEGS and offline RAW conversion)*.

In **FastRawViewer**, the sharpening is applied only for display. You can switch between two levels of sharpening and also set sharpening to "off." The settings are available through **Menu – View – Screen** sharpening *(the default shortcut is **S**)* and also through the **USM** button located on the bottom bar of **FastRawViewer**.

The following image has sharpening applied to the right side, while the left side doesn't:



To fine-tune the amount and mode of sharpening, you can use **Preferences – Image Display – On-screen sharpening.** We will cover this in more detail in the "*Program Settings*" section below.

This is also the place where you can switch off the sharpening for JPEG representation, turning on the **Sharpen RAW files only** setting**.**

Viewing File Channels, Viewing in Black and White Mode

FastRawViewer allows per-channel view of the RAW file and also conversion to black and white:

- **Menu – View – R channel** (**Ctrl-3**) Red channel is displayed.
- **Menu – View – G channel** (**Ctrl-4**) Green channel is displayed.
- **Menu – View – B channel** (**Ctrl-5**) Blue channel is displayed.

These modes work with internal RGB image *(after demosaicking, exposure adjustment, white balance setting).*

In these modes, the RAW and JPEG histograms are shown only for the displayed channel. If the RAW file is not RGB, then the histogram will be for the 1st, 2nd, and 3rd channels respectively.

- **Menu – View – RGB full color** (**Ctrl-2**) – back to RGB display mode.
- **Menu – View – BW-conversion full color** (**Ctrl-6**) – will show the black and white variant" of the image *(conversion from RGB is performed using the brightness channel formula, same as the one used while coding JPEG).*

Boosting the Shadows

The **Boost Shadows** mode is intended to assess the quality of the shadows in the RAW: it **opens up the shadows** at the expense of companding the highlights:

For the image above: on the left part the shadow boost mode is on, on the right, it is off. When the mode is on the indicating S in the **EDS** group on the bottom bar turns bright white.

You can turn the boost on/off through **Menu - View – Boost Shadows** *(or by pressing **Shift-S** on the keyboard)*.

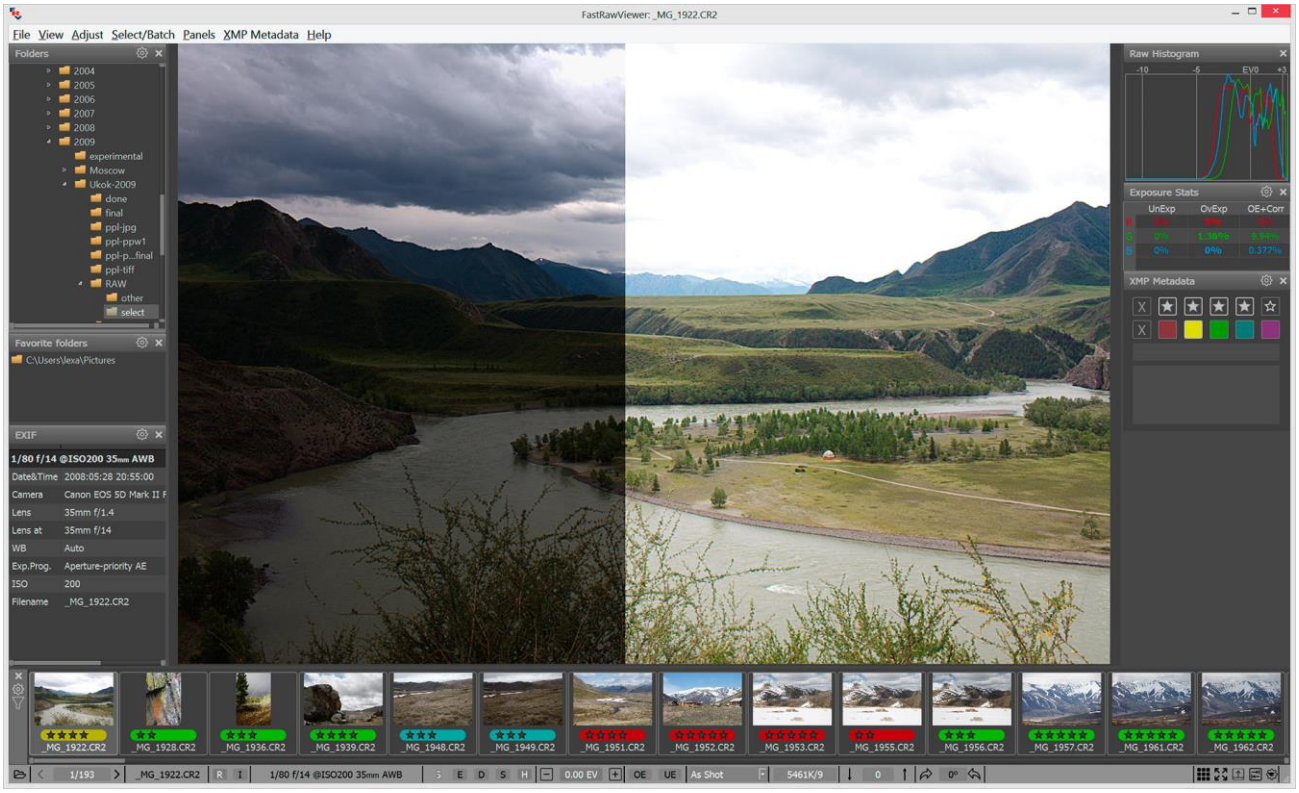
Setting the amount of boost: **Preferences – Image Display – Boost Shadows Amount** controls the additional gamma adjustment, the range is 0.2 to 2.0.

Inspection of Highlights

Highlight Inspection mode ***(Menu – View – Highlights inspection*** *or* ***Shift-H)*** does the "opposite" of the **Shadow Boost** mode:

- The brightness of the shadows and midtones is decreased, and as a result the image looks darker.
- The contrast in the highlights is increased.
- Additionally, you can "cancel" the white balance, by setting it to "**UniWB**" in **the Highlights inspection** settings.

As a result, you can evaluate the details in the highlights *(left – Highlight inspection mode on, right – default view mode; as we can see, the highlights contain plenty of details):*



Adjusting the Image Contrast

FastRawViewer allows one to apply "standard" tone curves *(sRGB, Gamma 1.8 u 2.2, L*),* but also offers the Variable Contrast mode for tone curves. To switch between those two types, you can use **Preferences – Image Display – Contrast Curve Type**.

In Variable Contrast mode, the image contrast can be adjusted in "grades":

- -5 to +5 for "normal contrast".
- U+0 to U+5 for "ultra contrast" *(useful, for example, for underwater photography).*

Normal contrast curves correspond to the contrast setting in Adobe RAW converters, process version 2012, from -100 to +100 *(with a step of 20)*; that is, +2 corresponds to 40 on the Adobe scale, while -3 corresponds to -60.

Ultra contrast corresponds approximately[2] to Adobe Contrast +100 with the Blacks slider from 0 to -100.

To increase contrast, you can use Menu – Adjust – Increase Contrast *(or press K on the keyboard)*, to decrease contrast Menu – Adjust – Decrease Contrast *(or Shift-K).*

By default, the contrast settings are recorded to an XMP file only in **FastRawViewer** format. To record it in the format that is acknowledged by Adobe converters, turn on **Preferences – XMP – Write Adobe-compatible Contrast/Blacks into XMP file**.

Using Monitor Profile For Display

FastRawViewer supports **Color Management** when showing RAW and JPEG files, however this mode is turned off in the **Windows** version by default for the following reasons:

- The majority of modern monitors are sRGB *(or close to it)* and using sRGB as a workspace when displaying RAW gives very acceptable results.
- Furthermore, in many cases supplied monitor profiles are inadequate, and they have a negative impact on the image appearance.
- Moreover, a noticeable number of users have optimized their video settings for computer games, manually turning on the anisotropic filtration of textures. This mode is incompatible with the Color Management function of **FastRawViewer.**

Color Management can be turned on through **Preferences – Color Management – Enable Color management**. Further color management settings are described in the "*Settings – Color Management*" section below. If the system profile of the monitor is set up properly, then further tuning of settings will, most likely, not be needed.

[2] Adobe programs clip the shadows below the setting for "blacks," in FastRawViewer we use a curve with a very gentle slope.

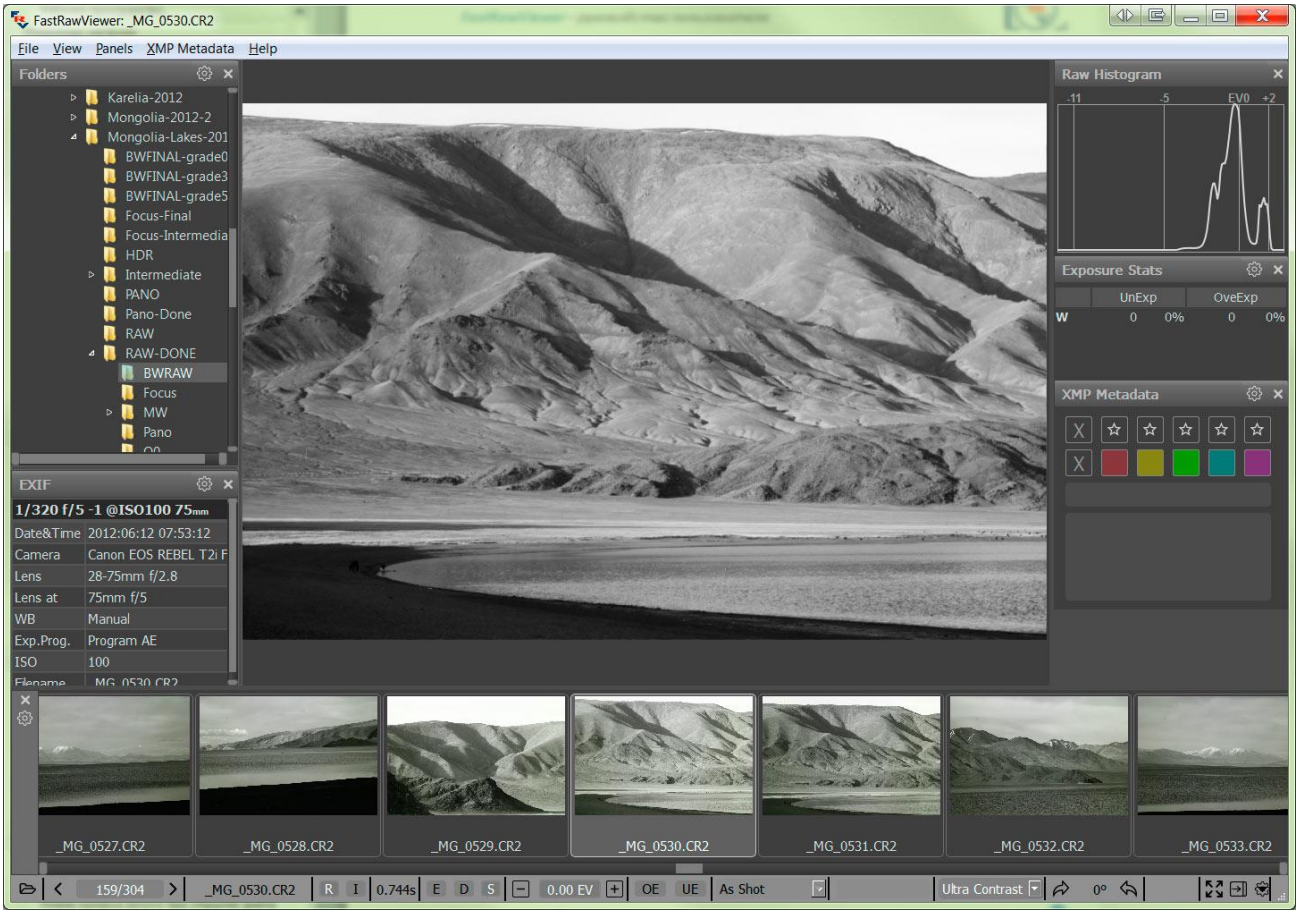
Support for Cameras Modified to Black and White

FastRawViewer supports black and white cameras that are made from color cameras by removing the color filter array *(CFA)* from the sensor.

This mode is turned on through **Preferences – Image Display – Force Black-White mode for Bayer images.**

In this mode:

- Demosaicking *(de-Bayerization)* is skipped.
- Per-channel viewing is turned off.
- White balance preferences are turned off.
- RAW histogram and exposure statistics are for one channel.
- The image is black and white:



This mode is not applicable to JPEG images; they stay colored.

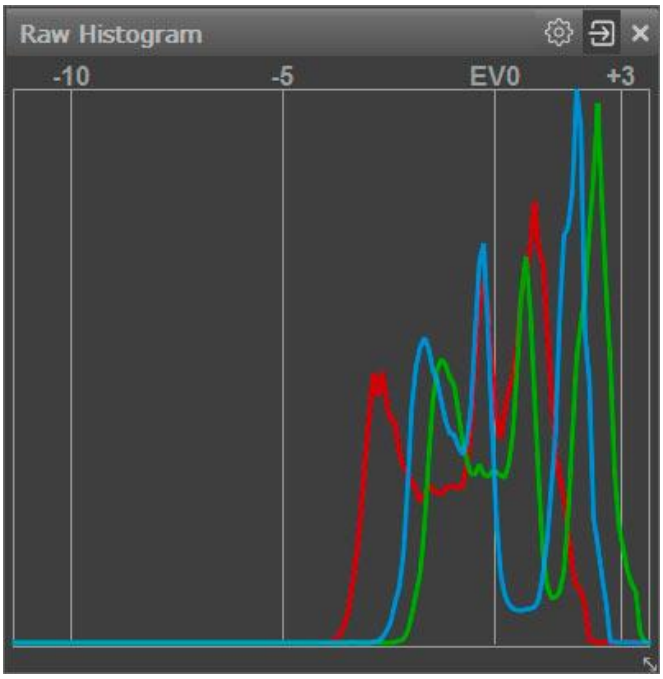
Working with Exposure

FastRawViewer offers several tools to analyze the exposure on a photograph, recommend exposure adjustments during a shooting session, and select exposure adjustment during RAW conversion:

- RAW-histogram.
- Over/Underexposure statistics.
- Showing the areas of over- and underexposure on the image.
- Automatic setting of positive *(lightening)* exposure adjustment.
- Manual Exposure adjustment setting.

Histogram

The **RAW-data histogram** is created based on the unmodified *(disregarding any exposure adjustments metadata)* RAW data from the file:



Horizontal Scale:

- EV0 – the level that corresponds to the middle gray. If exposure adjustment has not been applied, it's set to 3 photographic stops below the saturation level of a camera.
- -5 – the level that corresponds to normal clean easily workable shadows for the majority of modern cameras.
- +3 *(when exposure adjustment is turned on it can be +2 or +1)* – extreme highlights.
- The leftmost mark of the scale is the level that corresponds to the value of "1" in the RAW data.

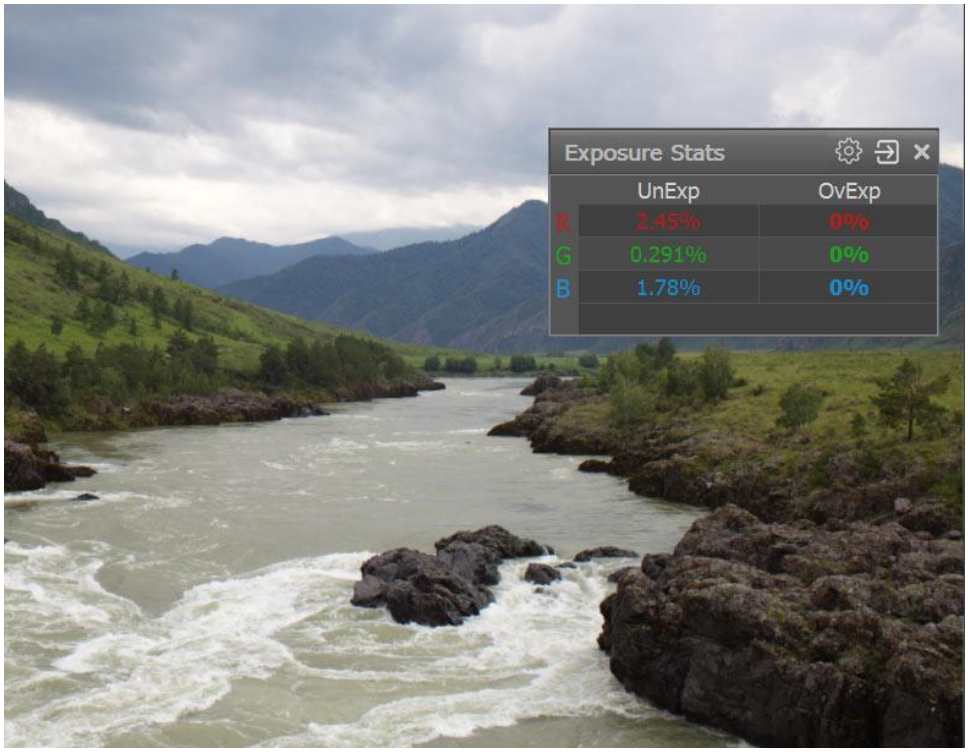
The histogram step on the horizontal axis is 0.1EV, so there will **always** be a "comb" in the shadows, as there are less possible levels than 10 levels per stop.

When applying exposure adjustment *(see below)* the histogram itself does not change – instead the horizontal axis shifts. During a positive exposure adjustment, the EV0 level shifts in the direction of the shadows *(because the shadow sections shifts to brighter ones – closer to middle gray)*, correspondingly the other vertical marks move as well *(and if needed, the numbers for the marks change as well)*. During a negative exposure adjustment, the axis shift is in the opposite direction.

Exposure Statistics

For RAW data, the exposure statistics are calculated for each channel. These statistics are displayed in the Exposure stats panel, which by default is located in the right side of the program window.

If no positive exposure compensation was applied *(that includes automatic exposure correction, please see below "Hidden Adobe exposure compensation")*, the table consists of three columns: the name of the Raw "color" channel, the percentage of underexposed pixels, and the percentage of overexposed pixels:



For the shot above, the statistics table shows that:

1. **Underexposure *(UnExp)*** is 2.45% in the Red channel, 0.29% in the Green channel, and 1.78% in the blue channel – those pixels are in the underexposure zone, that is **8EV** below the saturation point for the camera.
2. **Overexposure *(OvExp)***: no overexposure.

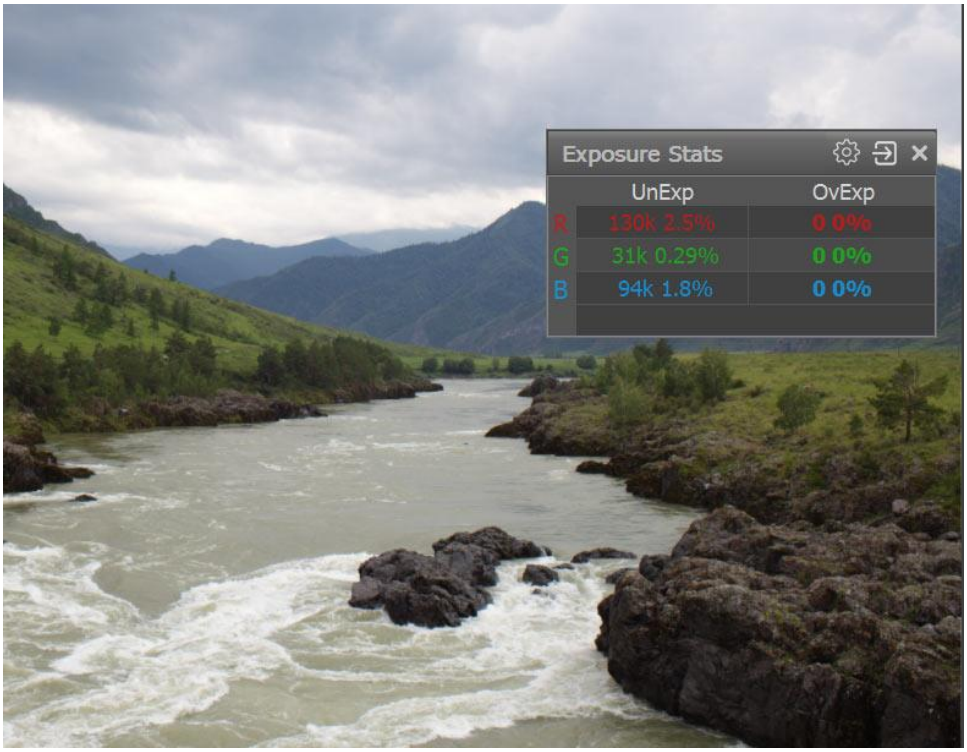
8EV is a standard value for the photographically usable dynamic range. You can change it to match your particular camera through **Preferences – Exposure – Underexposure detection limit.**

If positive exposure compensation was applied to the image the table may contain an additional column **OE+Corr**, indicating the number of pixels, which will be above the maximum value after the exposure compensation is applied.

After the positive exposure compensation was applied as in the shot above, 10% of “green” pixels are above the maximum, most probably because the value of the exposure compensation is a little bit overboard.

For a fast review of a significant number of files, it may be convenient to keep the **OE+Corr** column always on. This way, you won’t be distracted by the changes in the size of the panel. This can be done by going into the **Exposure Stats** panel’s settings *(gear icon)* and checking **Always display OE+Corr column.**

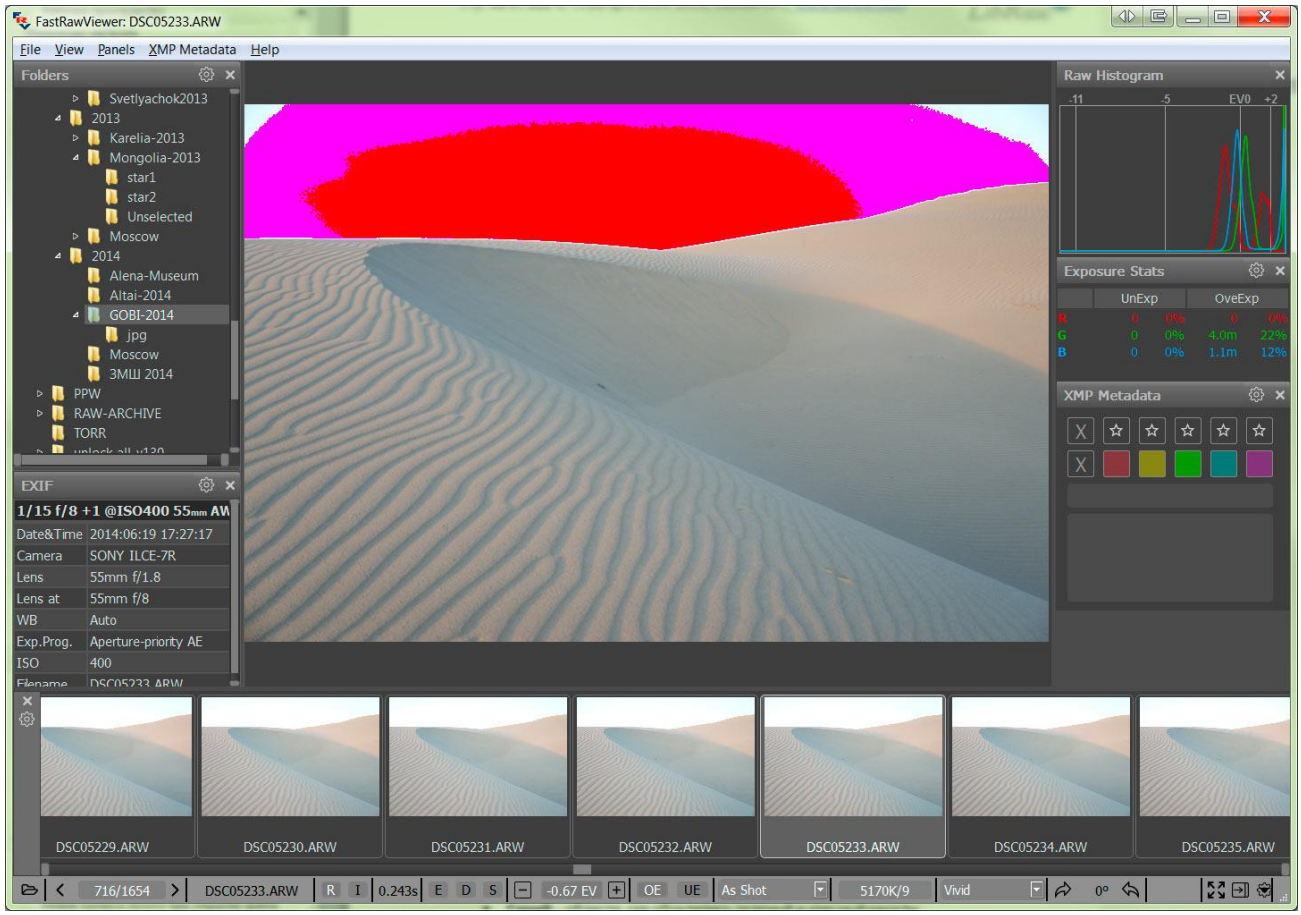
In the same settings menu, you can also enable the count of the number of over- and underexposed pixels by checking **Show pixel counts**:



Spotlighting the Areas of Over- and Underexposure

The over/underexposure areas can be identified using a colored overlay.

Spotlighting the overexposure zones can be turned on and off through **Menu–View–Overexposure Display** *(or by pressing the **O** key on the keyboard):*



If some pixels of a channel hit the overexposure limit the values for such pixels are clipped. **FastRawViewer** is using the following color scheme to spotlight the areas of overexposure:

- **Magenta** – areas where the green channel is clipped.
- **Cyan** – areas where only the red channel is clipped.
- **Yellow** – areas where only the blue channel is clipped.
- **Blue** – areas where both green and red channels are clipped.
- **Green** – areas where both blue and red channels are clipped.
- **Red** – areas where both blue and green channels are clipped.
- **Black** – areas where all 3 channels are clipped.

For this image, we see the blown-out green channel on almost the entire sky over the sand dune; while on the central portion of the sky the blue and green are both blown out. More likely than not, recovering the sky's tone normally via Highlight recover won't be possible.

With standard settings, the positive exposure adjustment has the effect on the overexposure area display: the areas shown are the ones that would be overexposed, if we had taken the shot with this exposure compensation on the camera. This behavior can be changed by turning off the setting **Preferences – Exposure – Exposure adjustments affects OverExposure display**, in this case only those areas that are overexposed *(clipped)* in the RAW file itself will be shown as the overexposed areas *(obviously, the exposure adjustment in **FastRawViewer** has no effect on the content of RAW files).*

Viewing the underexposure zone can be turned on and off through **Menu–View–Underexposure Display** *(or by pressing the **U** key on the keyboard):*

Like in the previous, the underexposed pixels are spotlighted with saturated colors:

- **Blue** – where the blue channel is underexposed.
- **Red** – where the red channel is underexposed.
- **Green** – where the green channel is underexposed.
- **Magenta** – where both red and blue channels are underexposed.
- **Cyan** – where both green and blue channels are underexposed.
- **Yellow** – where both green and red channels are underexposed.
- **White** – where all three channels are underexposed.

Exposure adjustments **do not affect** the display of underexposure areas *(or underexposure statistics)*.

For this shot, part of the foreground is underexposed; also, one can see areas with the red channel underexposed *(red),* and, also areas where both red and blue channels are underexposed *(magenta).*

Unlike for overexposure, which is determined fairly unambiguously in digital cameras *(by the "blowout" of one or more channels, the channel histogram pressed to the right edge and having a characteristic spike)*, the limit of the unacceptable underexposure area cannot be exactly determined, because it depends on

- Planned print size.
- Planned shadow boost in the current shot.

In **FastRawViewer,** the limit that controls the underexposure warning is set by the user themself in the preferences (**Preferences – Exposure – Underexposure detection limit**). The default value *(8EV)* is fairly conservative, and works pretty well for low ISO settings, 100-800 ISO. In the case of using high ISO, or strict demands to the image quality, this parameter may to be set lower *(to 6-7EV, and sometimes even lower)*, according to the technical requirements for the resulting image.

Exposure correction

Adobe 'hidden' exposure correction

By default, an exposure correction equal to the one that is automatically applied by Adobe converters is also applied when a RAW file is opened in **FastRawViewer** *(for more details, please see https://photographylife.com/adobes-silent-exposure-compensation)*.

As a result, the overall brightness of the rendition on the screen is a close match to a JPEG preview; and, given the contrast curve in **Preferences** is set to 'Variable Contrast' and contrast is set to default, it also matches the rendition in Adobe converters with all the sliders there being set to '0'.

The application of this standard exposure offset can be switched off via **Preferences – Exposure – Apply Adobe hidden exposure correction.**

Automatic exposure correction

If **Shift-A** is pressed, or **Menu – Adjust – Auto Exposure Correction** is enabled, **FastRawViewer** calculates and applies automatic exposure correction in such a way, that 1% of the total amount of pixels in the image are pushed to saturation *(receive the value of 255 on the 8-bit scale).*

The following settings for the automatic exposure correction are user-adjustable:

- Mode:
    a. Fixed shift by the given amount of stops *(EV),* the value is controlled through **Preferences – Exposure – Auto Exposure – Fixed Exposure shift.**
    b. Automatic calculation of the exposure compensation to shift the histogram 'to the right', controlled through **Preferences – Exposure – Auto Exposure – ETTR-style autoexposure *(shift histogram to the right).***
- Fine-tuning of the automatic exposure compensation:
    a. **Saturate up to NN% pixels** – controls the per cent of the pixels that will reach the saturation as the result of the automatic exposure correction.
    b. **Exposure shift limits**:
        i. **Unlimited** – no limit, goes all the way to the setting for **Saturate up to NN% pixels**
        ii. **Hard limit** – no more than the number of stops set in this field.
        iii. **Virtual ISO** – the limit depends on the ISO setting that was used to take the shot:
            - If the shot was taken at ISO in-camera setting higher that this limit, the maximum exposure correction is 0.
            - For the shots taken at lower than this limit ISO setting in camera, the maximum value for the exposure correction is equal to the difference *(in stops, EV)* between the ISO setting in the camera and the limit set *(for example, if the limit is set to ISO 6400, and the shot was taken at ISO 1600, the maximum amount of exposure correction is 2EV)*.

To switch off the exposure correction, making it 0 *(or, if Apply Adobe hidden exposure correction **is ON, making it equal to that value of hidden correction**),* **press the 'A' key** on the keyboard. **Second press of 'A'** will restore the previous correction.

Manual Exposure Correction

- Increase exposure adjustment: **Menu – Adjust – Increase Exposure** (**Alt-*Plus key***) or the **+** button in the lower bar of the window.
- Decrease exposure adjustment: **Menu – Adjust – Decrease Exposure** (**Alt-*Minus key***) or **-** button in the lower bar of the window.

The amount of exposure adjustment change per click / key press can be set through **Preferences – Exposure – Manual Exposure step size**.

Recording of the exposure correction to XMP files: Interaction with Adobe Programs

Exposure adjustment is recorded in XMP-file in the **FastRawViewer** format *(if reading/recording XMP is on)*.

Moreover, exposure adjustment in a format that is compatible with Adobe *(Bridge, Camera Raw, Lightroom)* is recorded in XMP as well. This recording can be turned off through **Preferences – XMP – Adobe Compatible Exposure and White Balance**.

Exposure Adjustment when Browsing to the Next File

If the value of the exposure correction can be read from an XMP file *(the priority is given to the value recorded in **FastRawViewer** format, and if it is not found, we take the value from the record in Adobe format)*, it will be applied when the file is displayed.

If XMP file does not exist, or the exposure correction records are absent in it, exposure correction will not be applied *(however, if **Apply Adobe hidden exposure correction** is **ON**, it will still be applied)*. This behavior can be altered through the setting
Preferences – Exposure – Exposure correction on file open:

- **No correction** *(default)* – exposure correction is not applied.
- **Autoexposure** – Automatic exposure correction will be applied, according to the respective settings for this type of correction.
- **Keep from prev. file** – same value of the exposure correction, as it was set for the previous file is applied. If the file is the first one opened during this session, no exposure correction is applied.

White Balance

FastRawViewer offers several methods of setting white balance

- Choose one of the standard presets *(As Shot/Auto/Daylight/Tungsten).*
- Set it by clicking on the known neutral gray area of the image.
- Set it by choosing the color temperature/tint value.

Indication of the White Balance

The white balance is displayed:

1. As the name of one of the presets *(or Custom)* in the drop-down list of white balance presets *(see the next picture)*.
2. As the values shown on the button for manual editing of white balance *(to the right of the drop-down list of available white balance presets)*.

The available white balance indication modes are chosen through **Preferences – White Balance – White balance display mode**

a. **Color Temperature/Tint** – a mode commonly used in RAW converters.
b. **Mired/Tint** – instead of correlated color temperatures, the value indicated is in Mired.
c. **WB Coefficients** – the per-channel coefficients *(factors)* of white balance are shown.
d. **Channel EV Correction** – the per-channel correction factors in EV *(stops)* of white balance are shown.

The calculation of color temperature/tint is not possible for all the cameras. It is also not possible for extreme white balance coefficients. Here are the limitations:

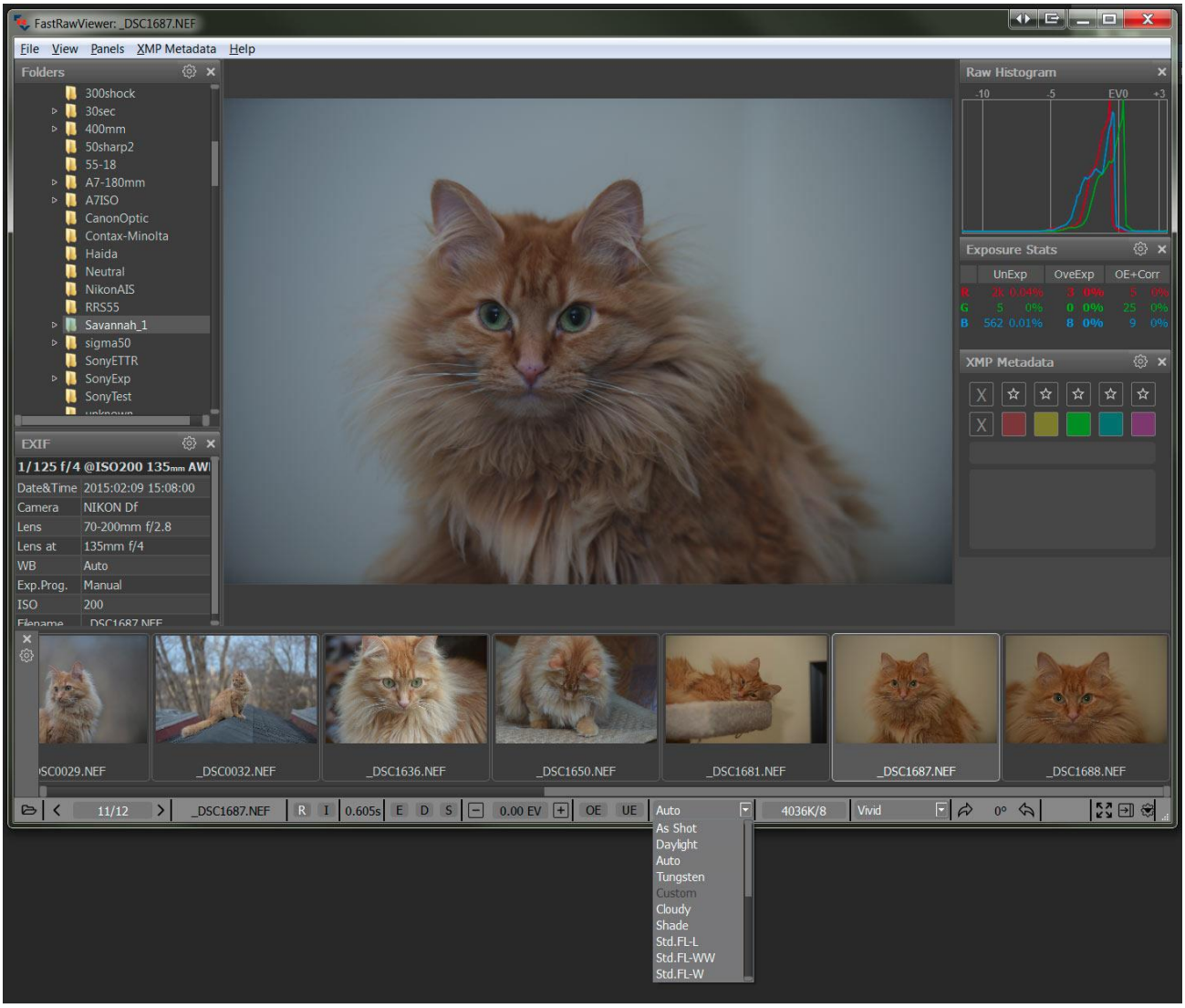
1. **FastRawViewer** must have the color data for the camera *(for the vast majority of modern cameras, it does)*.
2. The camera has to be RGB and tricolor. CMYG, RGBE, and other non-RGB cameras are not supported.
3. A range of color temperatures from 1667 to 25000K is supported. If you set the manual balance *(see below)* from a deep blue or a dark red area, then calculating the temperature may be impossible.

For those cases where the calculation of color temperature is impossible, the indication of CCT/Tint or Mired/Tint values is changed to "---/--".

White Balance Presets

For the majority of modern cameras, **FastRawViewer** contains a large amount of standard presets *(settings)* of white balance.

Choosing a preset can be done via the drop-down list menu in the lower bar of the program window:



Virtually everything is in this menu:

- As Shot *(excluding a small amount of old cameras, which don't record white balance in RAW).*
- Daylight.
- Auto.
- UniWB *(sets all coefficients of white balance to 1.0).*

The other modes in this drop-down correspond to those individual camera presets, and those vary depending on camera manufacturer and camera model.

Standard white balance modes *(As Shot, Daylight, Auto, Custom)* can be cycled through using **Menu–Adjust–Toggle White Balance** *(or by pressing **W** key on the keyboard)*.

If the RAW file contains a list of standard white balances in its EXIF data, this list will be shown in the drop-down menu *(between Auto and UniWB).* If there is no list of white balances in the file, then the generic table for the camera model that took the shot will be used instead.

If two neighboring files are taken with one camera, and a mode to preserve white balance when moving between files is active (**Preferences – White Balance – White balance for next file (same camera**), *see detailed description below)*, but the two above-listed files contain different balance preset lists *(for example, one file is in the camera's original RAW format, while the other is converted to DNG)*, then:

- If possible, the setting *(preset)* with the same name is preserved.
- If no such preset exists, then the "***White balance for the next file (another camera)***" is used, meaning that the program assumes that if the lists of white balances are very different between two files, then the camera must have been changed.

Controlling which White Balance will be Used when Opening a File

When opening the next file the White Balance is set in accordance to the settings in **Preferences–White Balance:**

- **White Balance for next file (same camera)** – sets the white balance mode when opening a file coming from the same camera model as the current file is. Choices here are: Same as previous, As Shot, Daylight, Auto, and Tungsten.
- **White Balance for next file (another camera)** – sets the white balance mode when opening a file coming from a different camera model. The choice of "***Same as previous***" normally does not fit here – all other choices are the same as for the previous.
- **Keep Custom WB for next file (same camera)** – instructs **FastRawViewer** if the current white balance coefficients should be applied to the next file coming from the same camera model.

Setting White Balance by "Click-Gray" Method

To set the white balance using an arbitrary area of the image as a reference, use **Alt-left mouse click**.

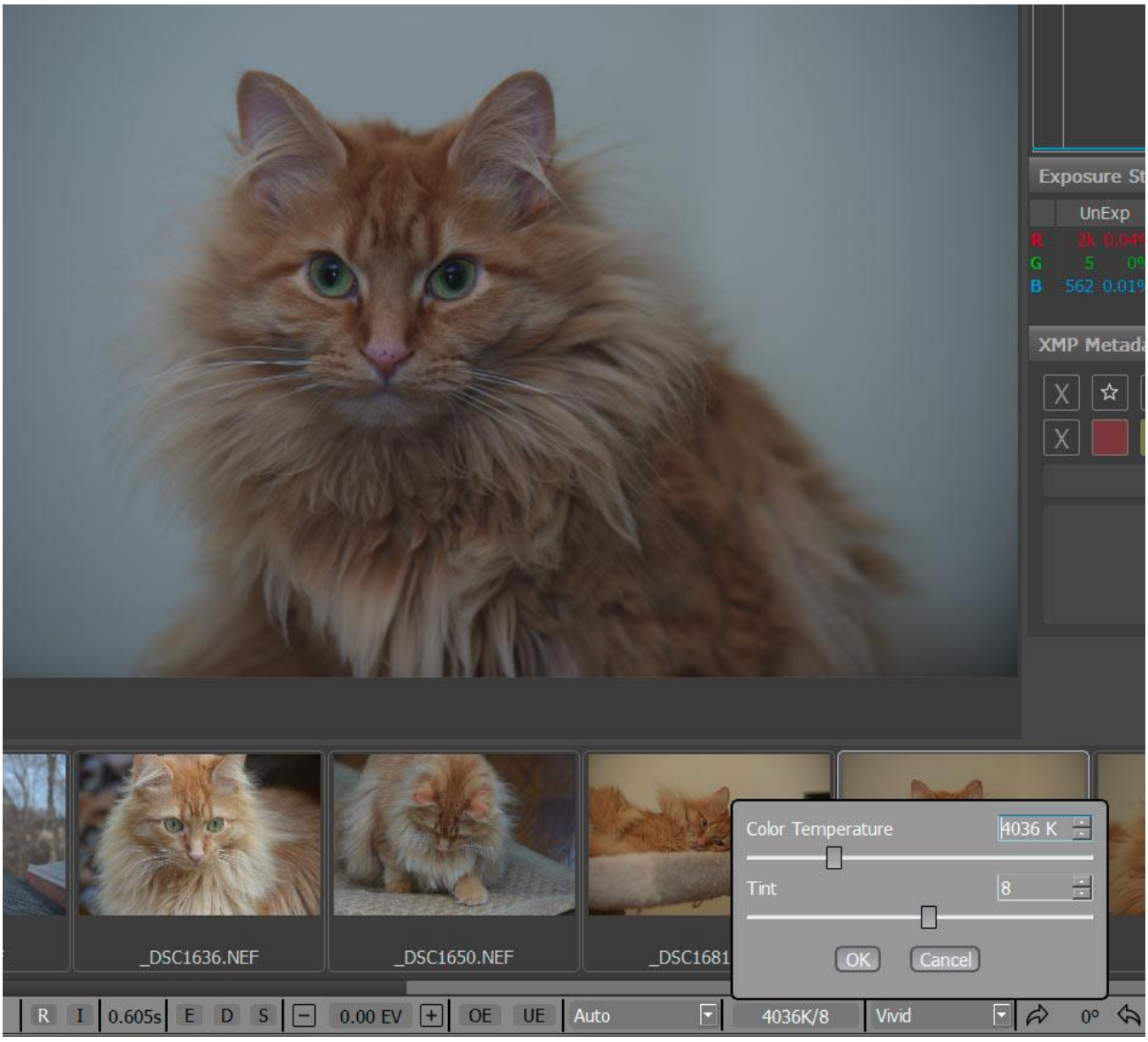
The size of the area which is evaluated to calculate the white balance can be set through **Preferences – White Balance – WB Sampler size**

Coefficients will be calculated for the chosen area so as to make whatever is "clicked" gray. The image will change its look *(automatically calculated exposure adjustment may change as well)*.

If the correct color temperature can be calculated with the given coefficients, then it will be displayed on the button for the manual white balance adjustment.

Manually Setting the Color Temperature

When pressing the button with the values of color temperature/shades *(to the right of the drop-down list with white balance presets)* the manual white balance adjustment dialogue appears:



The changes made in this dialogue are applied to the image on the screen on the screen with a slight delay *(up to 200ms)*. If the changes you've made satisfy you, hit **OK**. If not, continue adjusting, or hit **Cancel** to disregard any changes.

Outlining In-Focus and Highly Detailed Areas

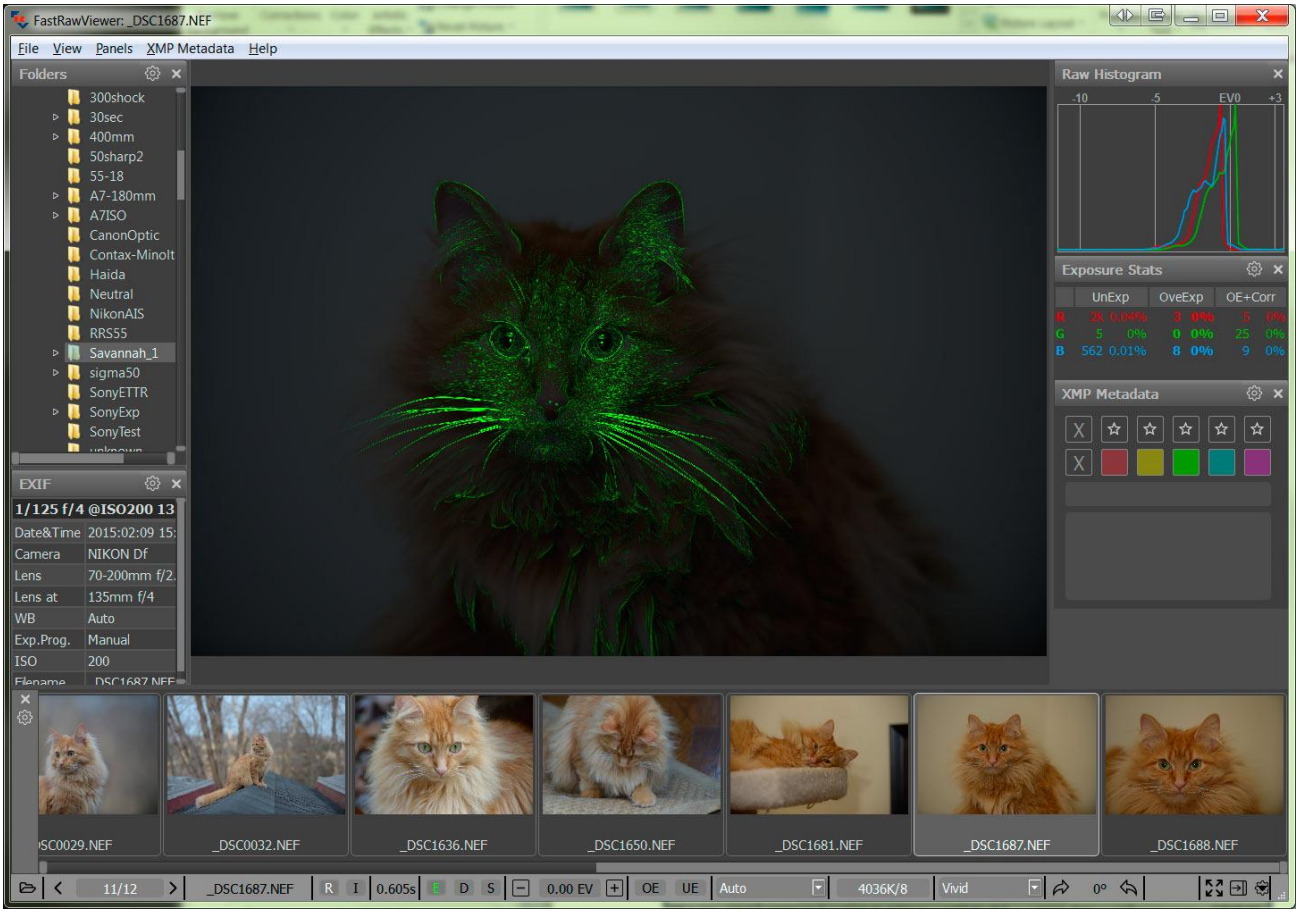
FastRawViewer can help identifying if the sharp areas are indeed where you wanted them to be on the image. This is accomplished through outlining the following:

- Bold high contrast edges.
- Areas containing small *("pixel-level")* sharp details.
- Additionally, you can turn on the simultaneous display of both types of outlines *(not possible for some video cards)*.

You can cycle through these modes using **Menu–View–Toggle Focus Peaking** *(or by pressing the **P** key on the keyboard)*, like following: **Everything off – High contrast edges – Fine details – Both filters** – everything off.

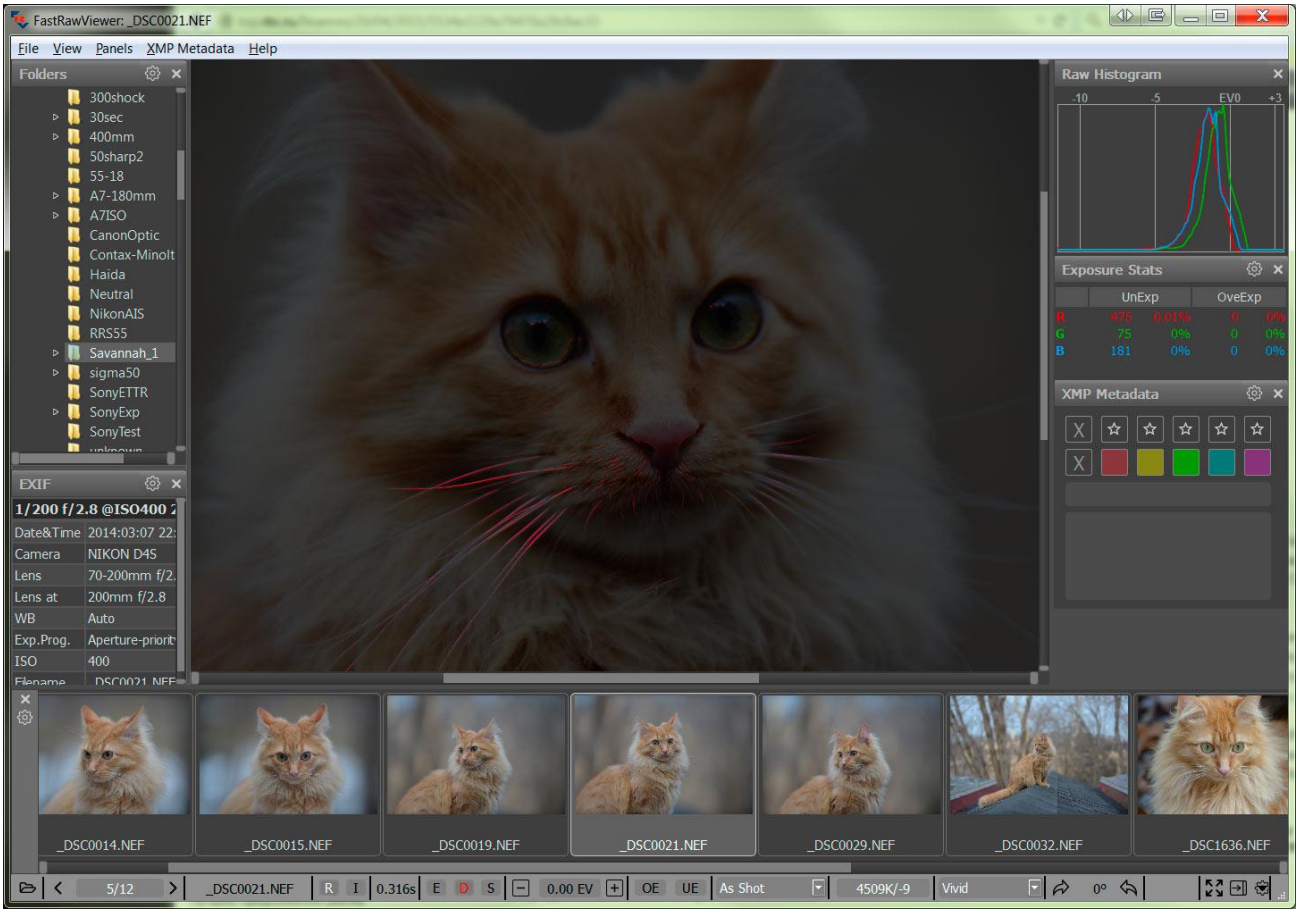
Unnecessary/unused modes can be turned off through **Preferences – GPU Processing – Focus Peaking mode**.

The **High Contrast Filter** shows contrasting, but not necessarily very sharp areas of the image:



When this filter is on the letter **E** in the **USM EDSH** group on the bottom bar takes the same color that is used for the outline *(green by default).*

The **Fine Detail Filter** outlines small, acute, but not necessarily contrasting details:



When this filter is on the letter **D** in the **USM EDSH** group on the bottom bar takes the same color that is used for the outline *(red by default)*.

The colors that are used outlines for both filters, as well as the opacity of the filter overlay are controlled through the settings in the **Preferences – GPU Processing – Focus Peaking mode** section**.**

Performance Settings

Depending on the characteristics of your computer, the most important ones being

- Amount of RAM.
- Number of processors and cores per processors.
- Type and performance of the video card.

You may need to tune the performance settings of **FastRawViewer** to be more comfortable.

FastRawViewer is optimized for work with files on modern high-speed storage devices: SSD drives, disk arrays *(RAIDs),* fast flash cards *(UHS-I and similar in fast USB3 readers)*.

When using slower media, additional optimization of **FastRawViewer** may be necessary, because the default settings will not be optimal.

Sequential and "Random" Browsing

While you are moving sequentially from one file to another *(using **Menu – File – Next File** or by selecting the **next file through the Filmstrip** or **Grid**)*, **FastRawViewer** is decoding the next file ahead, so as to make the transition to the next file faster.

When you are browsing through the files in a "random" manner, that is selecting files which are two files ahead or two files behind, the program can't predict what will be the next file to process.

Because of this, it is recommended that one browse the shoot in a sequential manner, which is only logical as in most cases, one wants to look through all of the shots that one made. As was already mentioned for sequential browsing, decoding looks ahead, working in the background, making the whole process smoother, without any delay for reading and decoding files.

Hard Disk Drives (HDD) and Hybrid drives (HDD with SSD cache)

Hard disk drives, cannot read the data from multiple locations at once: the delays are caused by the time spent on the positioning of magnetic heads.

Accordingly, when using HDDs for optimal performance of **FastRawViewer** it is necessary to decrease the amount of parallel reads:

1. **Preferences - Performance - Memory usage and performance - Number of simultaneous RAW decode threads**
   recommended values for HDD: 2-3
2. **Preferences - Performance - Thumbnail cache - Thumbnail decoder thread count**.
   Set 1-3 for HDD *(the higher, the more priority will be given to the preview generation over the other functionality of **FastRawViewer**).*
3. **Preferences - Performance - Thumbnail cache - Thumbnail prefetch depth**
   This parameter can be lowered *(down to zero)*, which will lessen the load on the HDD.

Flash Cards and Network Volumes

Like HDDs, portable media and network volumes work slower than modern SSD storage devices. **FastRawViewer** can additionally limit the parallel functionality when working with such devices.

Default preferences are intended for work with today's typical storage media: Gigabit Ethernet network and flash cards of "average speed" in USB3 readers; for slower devices the default settings ought to be changed:

For Network volumes:

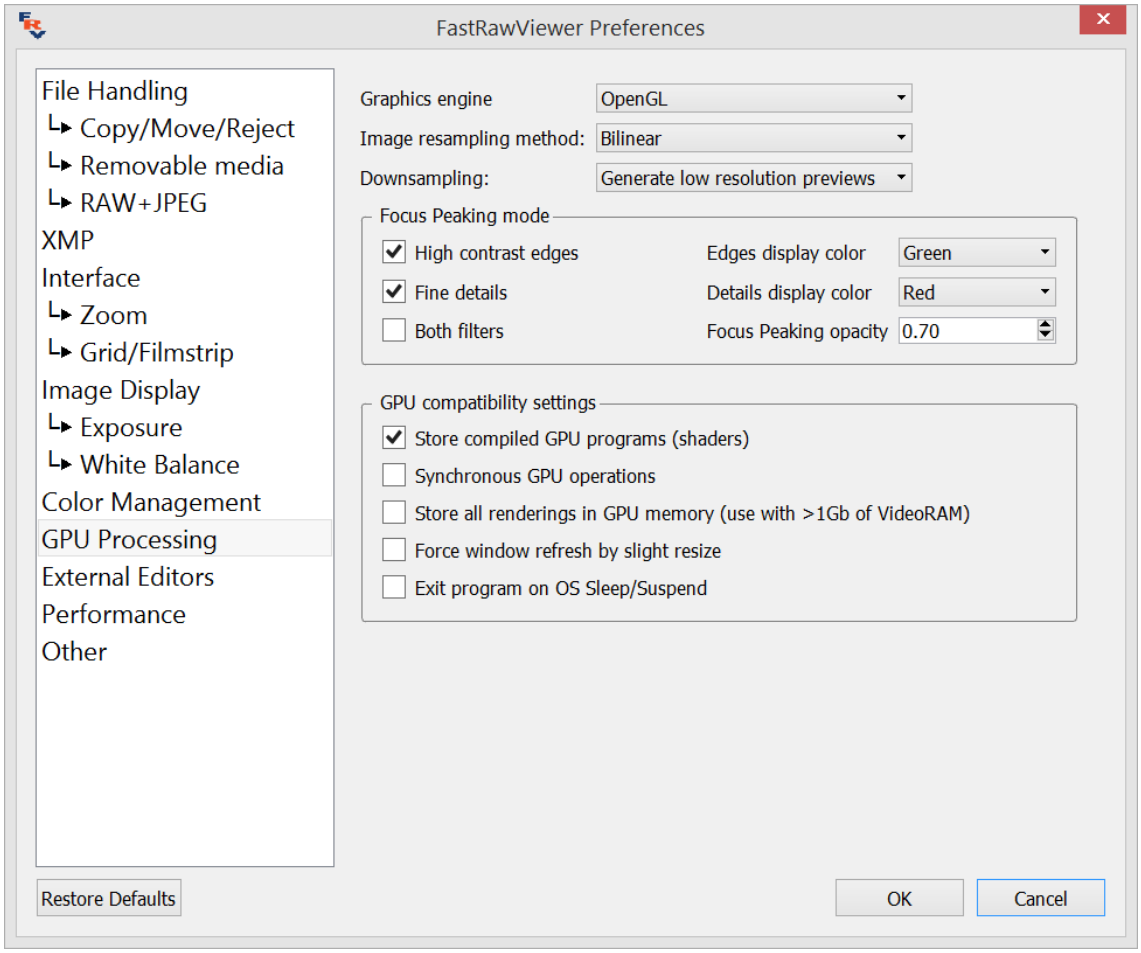
- When using a WiFi-network:
  Lower the preferences values.
  Preferences – Removable Media – Prefetch depth on network volumes
  to 2-3.
- When using fast network/NAS *(1Gb/s and faster, in NAS with 4 and more disks in RAID):*
  Raise the preferences values.
  Preferences – Removable Media – Prefetch depth on network volumes
  to 6-8.

For Flash cards:

- Slow cards *(USB2 readers, Class 6 cards and slower)*:
  Lower the preferences values.
  Preferences – Removable Media – Prefetch depth on removable media
  to 2-3.
- Fast cards *(USB3/SATA readers, UHS-I/CFast cards)*:
  Raise the preferences values.
  Preferences – Removable Media – Prefetch depth on removable media
  to 6-8.

Customizing Display Modes

FastRawViewer uses the advanced features of modern video cards to display images. In particular, zooming in and out is performed using video card processor, GPU. Depending on the particular set of features and performance of your video card, you may wish to tune the settings controlling the display:



- **Preferences – GPU Processing – Image Resampling method** sets the method to be used for calculating zoom-in *(going above 100% view):*
    - **No resampling** – for large zoom factors, the image will look as if it is constituted of small square tiles.
    - **Bilinear resampling** – fast, mid-quality method.
    - **Bicubic resampling** – high-quality method, a relatively fast vast video card is recommended.
- **Preferences – GPU Processing – Downsampling options –** sets the method for zoom-out calculations:
    - **None –** no additional processing is involved.
    - **Generate low resolution previews** – most compatible method, but relatively slow.

- **Suppress downsampling artifacts –** we recommend turning this on when you are viewing a noisy image *(high ISO, underexposure, deep shadows bumped, etc.)*

Not all of the above-listed modes are available on all video cards. If you have an older video-card, Bicubic and artifact suppression may not be available at all.

Default settings are optimized for low performance *(older)* video cards, but if you happen to have one of modern cards *(including those based on Intel HD4xxx and higher),* we recommend changing the settings in the following way:

1. Turn on **Preferences – GPU Processing – Image resampling method – Bicubic.**
2. Set **Preferences – GPU Processing – Image downsampling** to None or to Suppress downsampling artifacts.

In this case, the amount of the data transferred into the video card is minimized, and the image display is faster.

In some cases *(older video cards, buggy drivers)* you may encounter equipment compatibility problems. In this case, you may need to use the compatibility options under the **Preferences – GPU Processing – GPU Compatibility settings** section:

- **Synchronous GPU Operations** turns on a slower but more stable mode operation for the misbehaving video cards.
- **Force Window refresh by slight resize** –the screen refresh is implemented through the slight resize of the window. You may want to turn this mode on if the images on the screen are not redrawn properly.
- **Exit program on OS Sleep/suspend** – some versions of Windows XP video card drivers perform an incorrect wake up and **FastRawViewer** crashes when the computer wakes up after Sleep/Suspend. In this case, you will need to use this mode and start **FastRawViewer** again each time the computer wakes up.

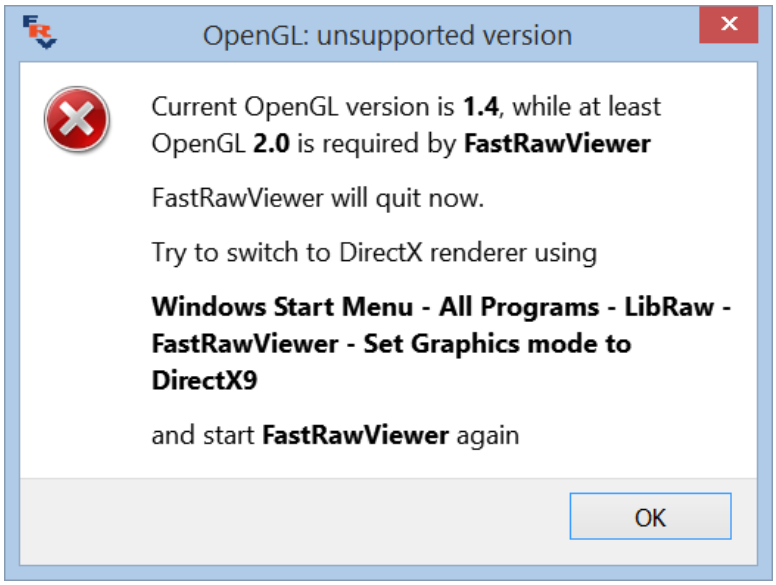
Troubleshooting

Windows: Changing the Active Graphics Engine

In some cases *(to the best of our knowledge, this will only happen due to an old graphics driver),* **FastRawViewer** cannot use the automatically selected graphics engine.

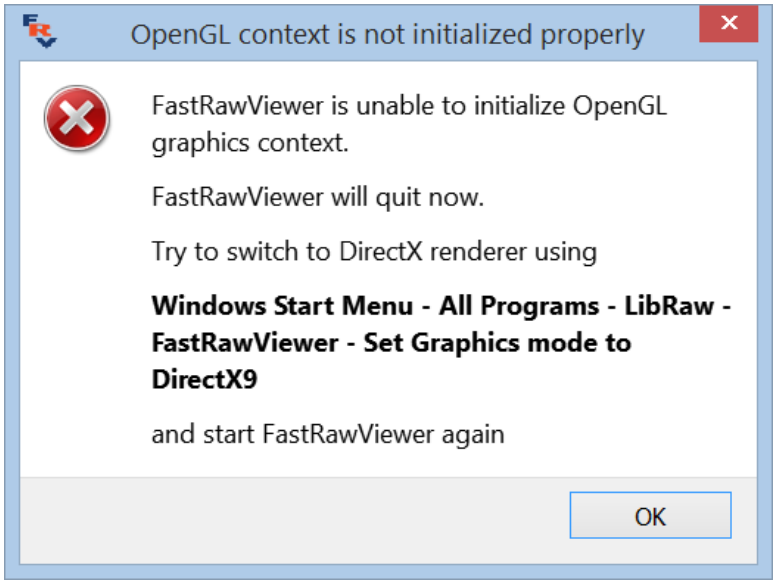
When this happens, one of the following warnings is displayed:

OpenGL mode, unsupported version of OpenGL



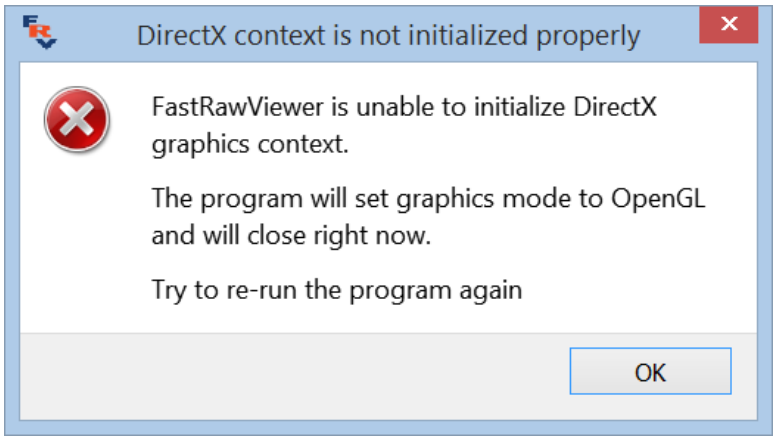
FastRawViewer informs the user that the version of OpenGL made available by the OS is not recent enough for the program to operate, and offers to manually switch to the graphics acceleration through DirectX 9 *(see below, the section "Manually Changing Graphics Modes")*

OpenGL mode, context is not initialized properly



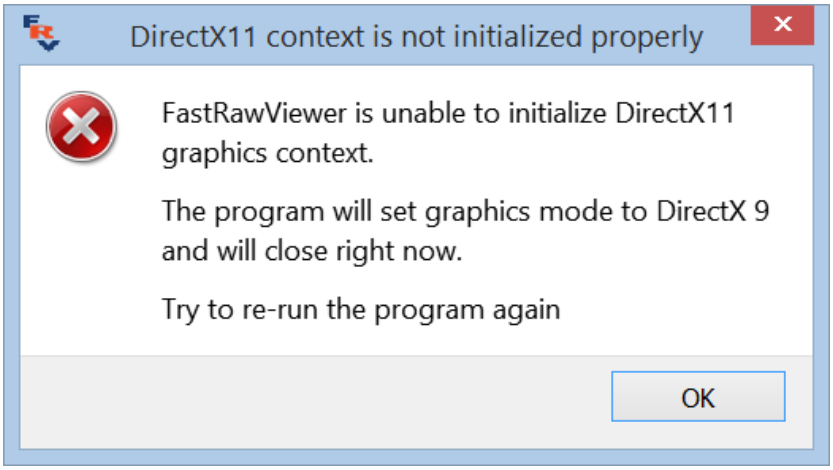
FastRawViewer informs the user that the version of OpenGL available in the system does not support the features necessary for the program to operate, and offers to manually switch to the graphics acceleration through DirectX 9 *(see below, the section "Manually Changing Graphics Modes")*.

DirectX9 context is not initialized properly



FastRawViewer informs the user that the version of DirectX available in the system does not support the features necessary for the program to operate; and switches to OpenGL, which will be used upon the next program launch.

DirectX11, context is not initialized properly



FastRawViewer informs the user that the version of DirectX 11 available in the system does not support the features necessary for the program to operate; and switches to DirectX9, which will be used upon the next program launch.

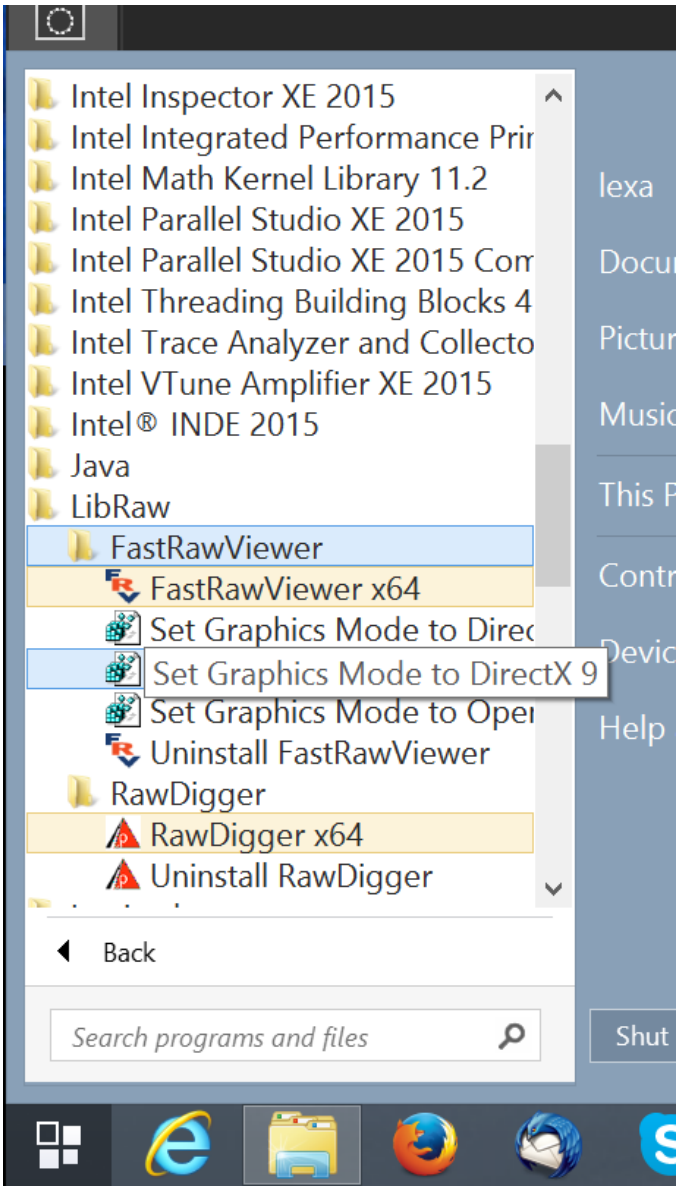
Manually Changing Graphics Modes

When installing **FastRawViewer** on a Windows platform**,** several additional items are installed into the Start menu, which allow one to change the graphics engine without launching **FastRawViewer** *(if the automatically selected graphics engine turns to be inadequate, then access to the settings is impossible, as the program itself cannot be launched)*.

The following is accessible:

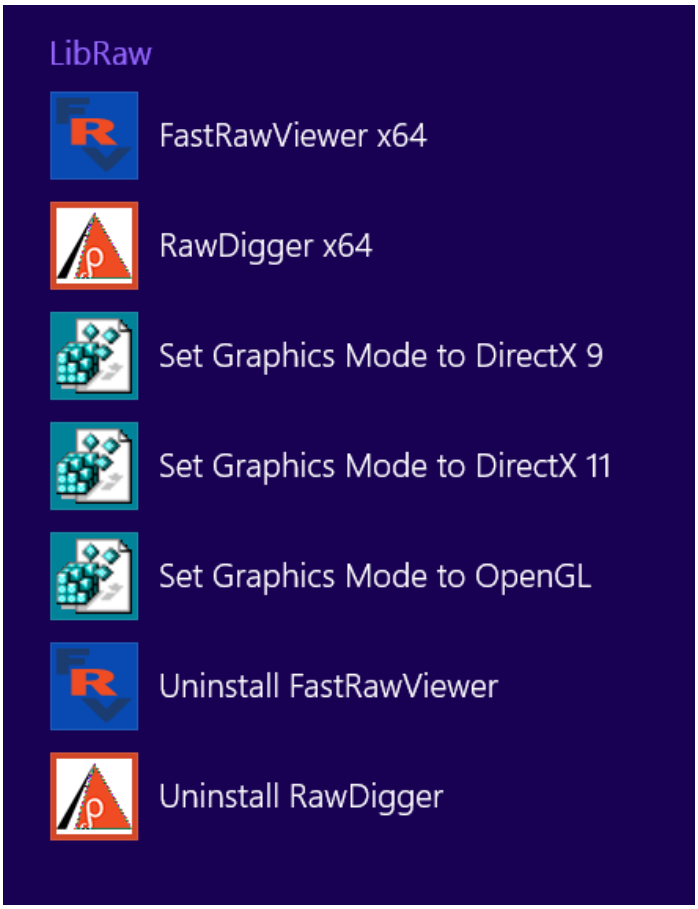
Windows XP – Windows 7, Windows 10 ***(and Windows 8 with an installed Start8 or Classic Shell)***

Windows menu – All programs – LibRaw – FastRawViewer, Set **Graphics Mode** to:



Windows 8/8.1, access through the list of Windows 8 programs

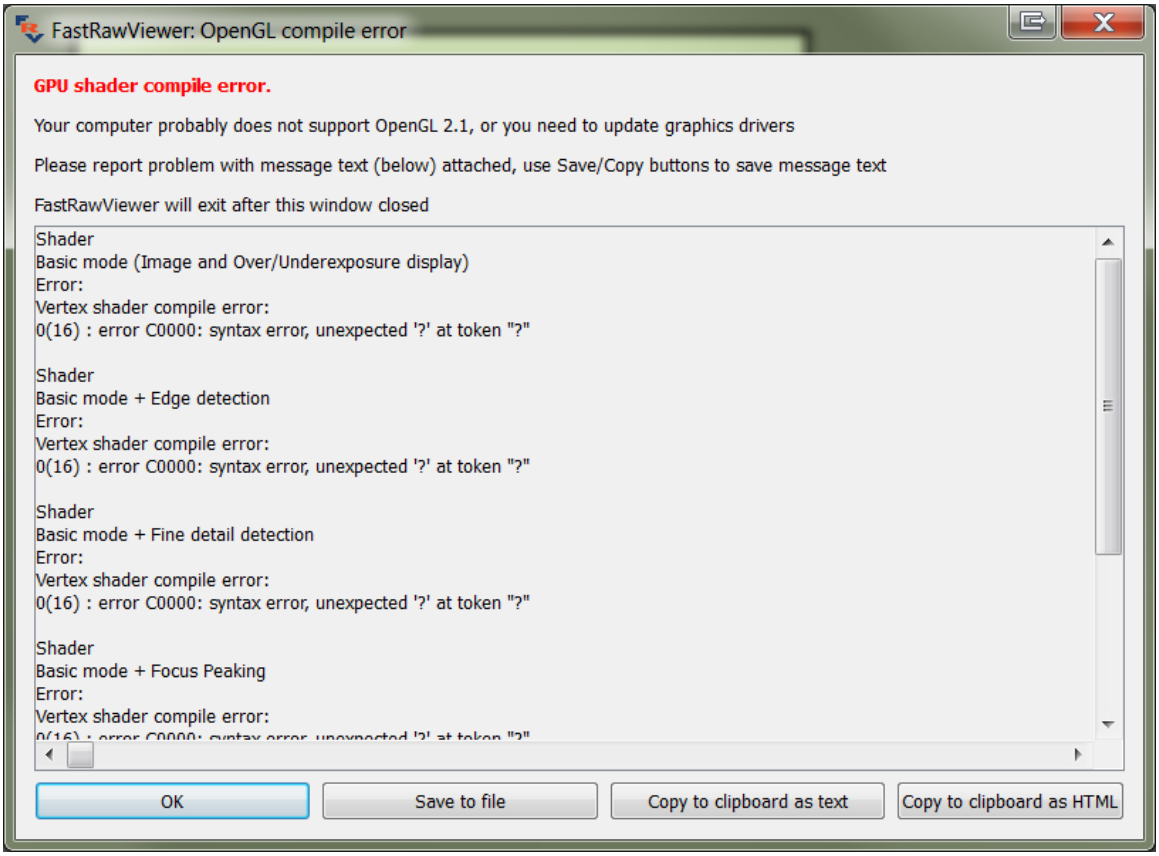
LibRaw, Set **Graphics Mode** to:



The Registry scripts shown above must be used in the case that **FastRawViewer** informs the user that the available version of OpenGL is inadequate and suggests switching to DirectX.

OpenGL Error Warning when Starting the Application

During the first start-up, **FastRawViewer** may warn the user of an error with the graphics subsystem, showing the following dialog window:



This window indicates that the graphics driver cannot process those sub-routines that **FastRawViewer** needs to execute on the video card.

Possible solutions:

1. Switch to the other version of the graphics engine *(if you're using OpenGL – change to DirectX and vice versa)*. A description of the engine switch is given in the previous section.
2. Update the driver of your video card to the newest version.

If neither of the above-listed helped you, copy the error message using the '**Save to file**' or '**Copy to clipboard**' buttons and send it to our tech support at http://www.fastrawviewer.com/contact/Technical-support or support@fastrawviewer.com

Black Screen in Image Display Window

When opening a file, a black screen is shown instead of the image.

This problem is due to some incompatibility between **FastRawViewer** and the installed graphics drivers.

Possible solutions:

1. Switch to the other version of the graphics engine *(if you're using OpenGL – change to DirectX and vice versa)*. A description of the engine switch is given in the previous section.
2. Update the driver of your video card to the newest version.

If neither of the above-listed helped you, turn on the debug log *(see below «Debug Information»)*, restart the program, open a RAW file, and send the debug log to tech support at http://www.fastrawviewer.com/contact/Technical-support or support@fastrawviewer.com

Screen does not fully update

When moving to the next file, or when changing the white balance or the contrast curve, the screen does not fully update, and square-shaped areas filled with the previous image remain.

This problem only happens for Windows XP, and only for old Intel graphics cards *(845G and the like)*.

Solutions:

1. Turn on **GPU Processing – GPU Compatibility settings – Force window refresh by slight resize** in the Preferences.

   When turning on this setting, the application window will twitch by one pixel for each image redraw.
2. Upgrade to Windows 7 – Intel graphics drivers for Windows 7 do not have this problem.

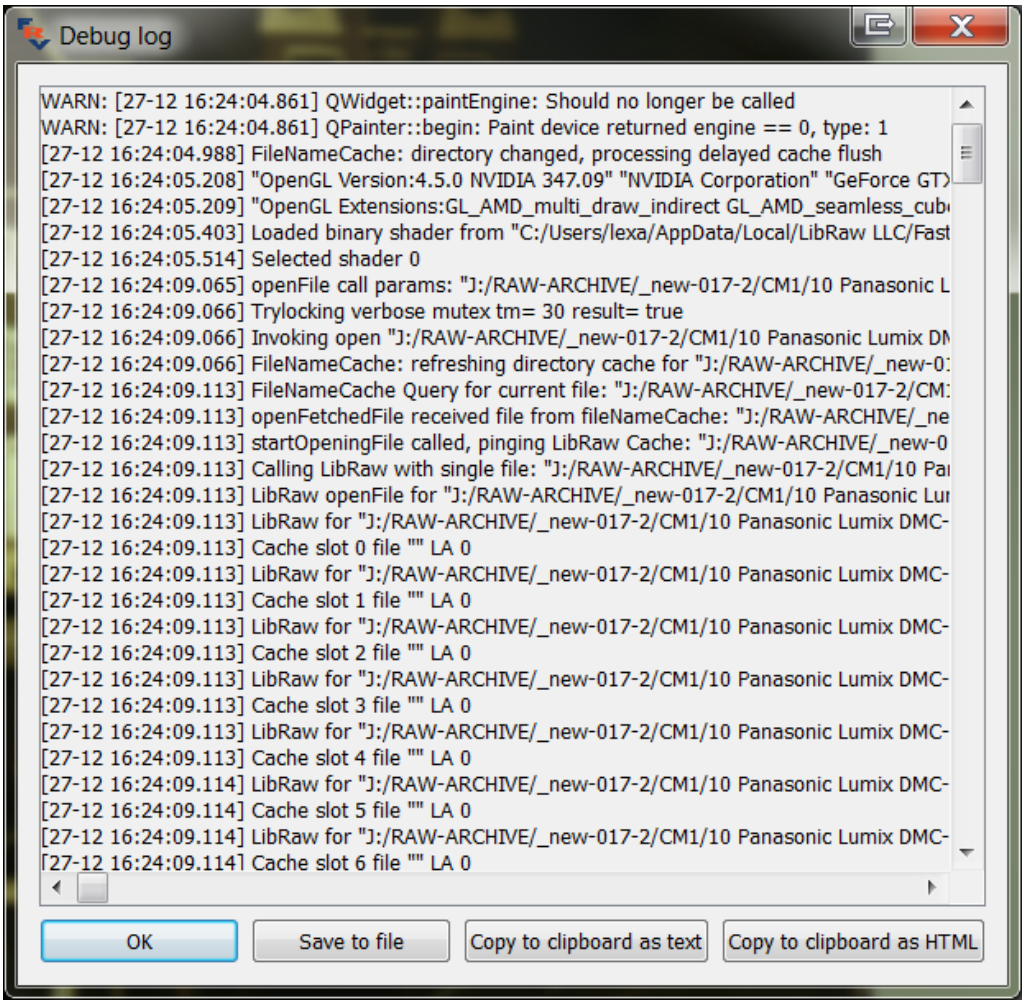
Other problems

If your problem is not listed above, then, to make troubleshooting faster, please turn on your Debug Log, *(see below)* and when contacting support please attach a copy of the debug information.

Debug Information (Debug log)

To turn on the output of debug information, turn on **Other – Enable FastRawViewer debug log** in the Preferences and restart the application.

After turning it on, the **Debug log** appears in the **Help** menu, and pressing it will display a window with the debug info:



The contents of the window:

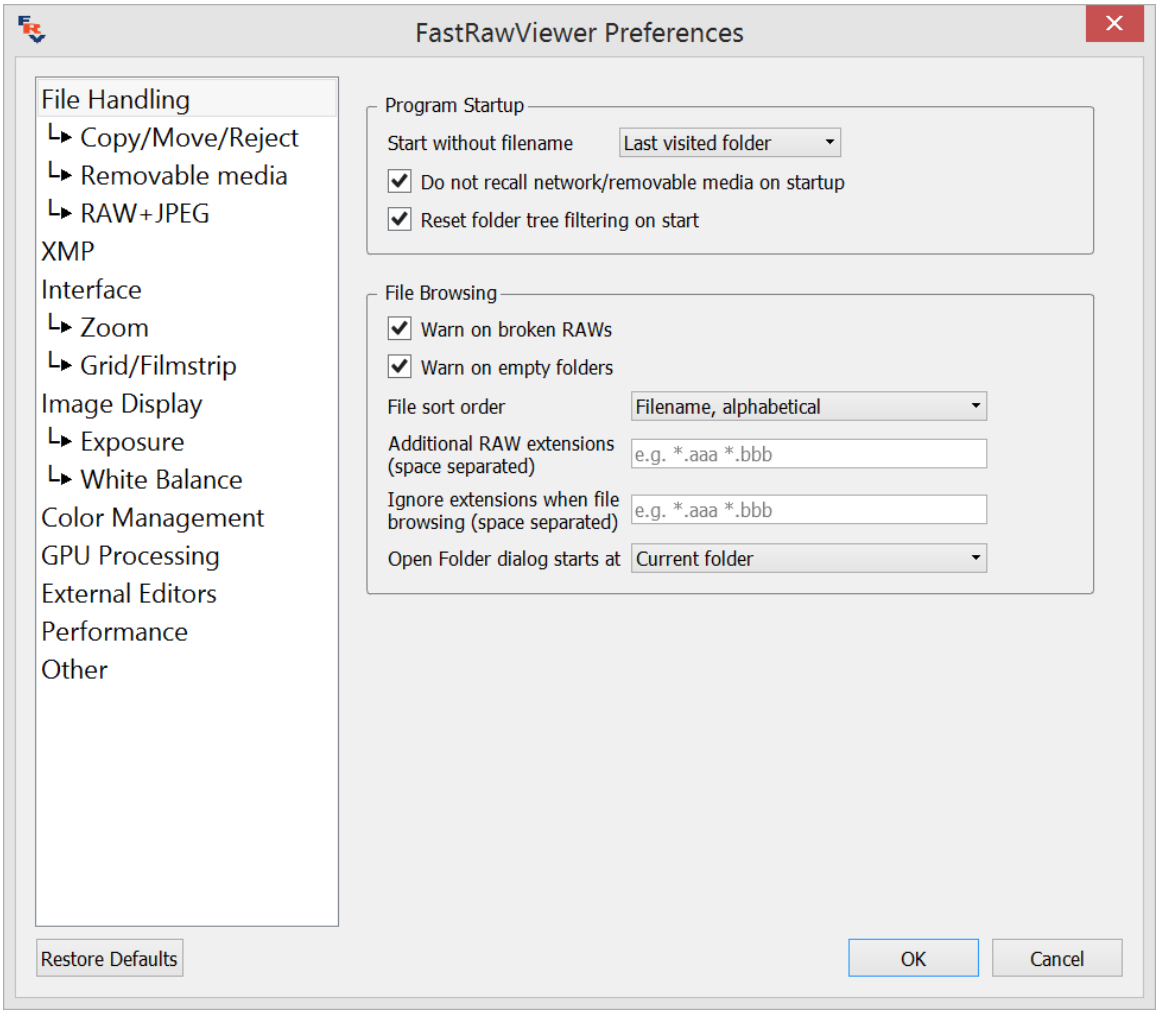
- Can be saved in a text file *(the **Save to file** button).*
- Can be copied as text into the clipboard *(for applications which expect text in the clipboard: most email applications)*.
- Can be copied as HTML into the clipboard *(for applications which expect 'rich text' in the clipboard, like text processors)*.

When turning to tech support, please remember to attach the debug log.

Program Settings

File Handling

This group of settings controls the file processing rules



Program startup group:

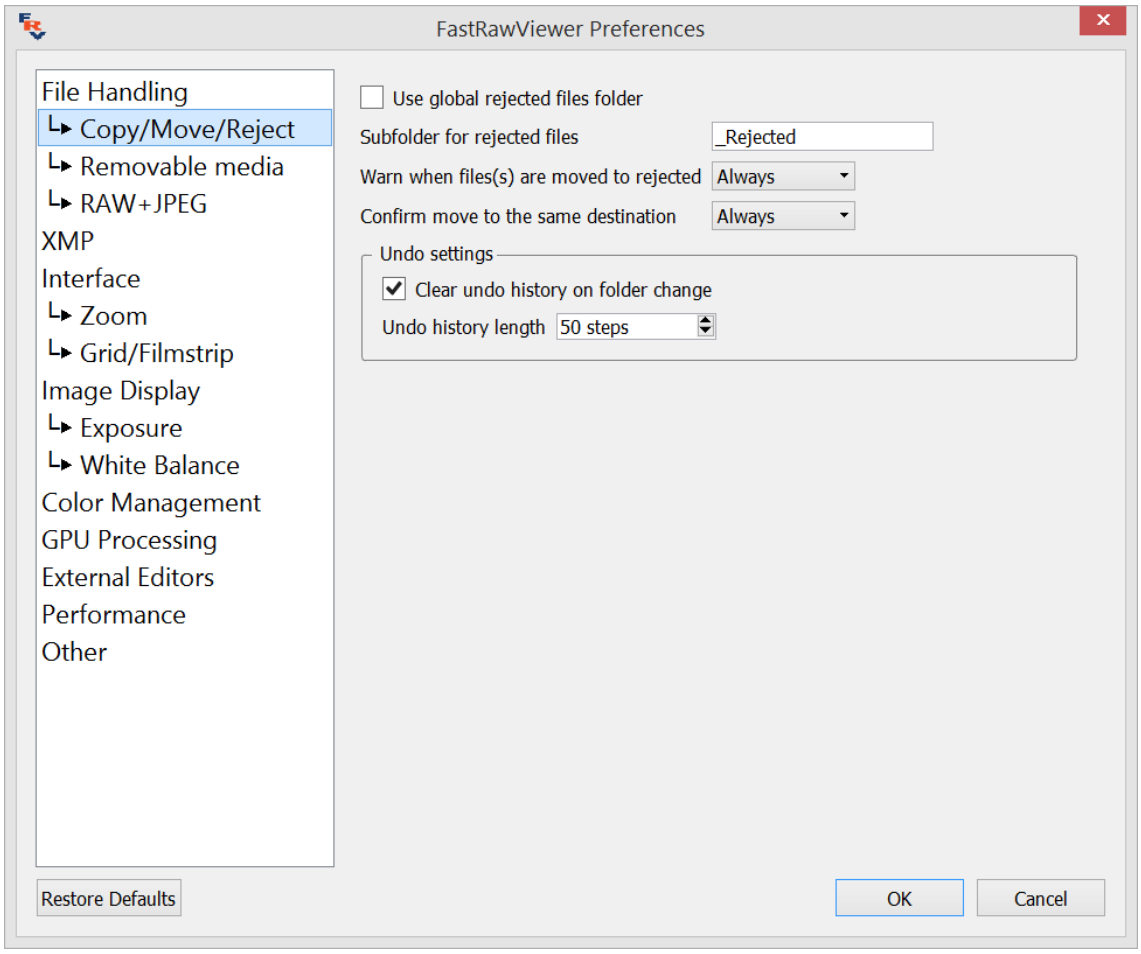
- **Start without filename** – to set the behavior if **FastRawViewer** was started without passing a filename to view:
  - **Empty Screen** – **FastRawViewer** starts up "without file".
  - **Last opened file** – opens the top *(last)* file from the Recent Files list.
  - **Last visited folder** – opens the folder from the list of Recent Folders *(from this folder opens either the first file, corresponding to the current file sorting settings, or the last opened, if the 'Remember last opened file in folder' is set).*
  - **Specified folder** – allows you to set a "start folder".

- **Do not recall network/removable media** – forbids the automatic display of files/folders from network volumes and removable media.
- **Reset folder tree filtering on start** – will clear folder filtering on program start.

File Browsing group

- **Warn on broken RAWs** – turns on the warning if a damaged RAW file is encountered.
- **Remember last opened file in folder** – turns on the setting to memorize the last opened file in the folder. A small .fastrawviewer.ini file is created in the folder; this file contains the name of the last opened file. It is safe to delete this file.
- **File sort order** – sets the order of file selection when browsing through the files:
    - **Filename, alphabetical** – by filename, in alphabetical order, without accounting for letter case, accounting the current localization settings *(like with previous FastRawViewer versions).*
    - **Filename, reversed** – the order is opposite to the previous.
    - **Modification time, newest to oldest** – sorts the files by date of creation/last modification of the files, new files in the top of the list.
    - **Modification time, oldest to newest** – the order is opposite to the previous.
    - **File type (extension)** – files are sorted by extension; files with the same extension are sorted alphabetically.
    - **EXIF Timestamp newest to oldest/oldest to newest** – sorting by date/time of shoot. When sorting by time of modification of the file or by EXIF timestamps, files that have the same modification time *(usually, time is kept to an accuracy of within a second)* are sorted alphabetically when sorting oldest to newest, and reverse alphabetically when sorting newest to oldest.
- **Additional RAW extensions** – additional extensions for the RAW files FastRawViewer should process *(appended to the built-in extension list)*.
- **Ignore extensions when file browsing** – this setting allows the user to supply a list of file extensions. Files having the extensions listed here:
  - will be ignored during file browsing;
  - not displayed in the "Open file" dialogue window.
- **Open folder dialog starts at** – sets the folder at which the "**Open Folder**" dialog starts:
    - **Current folder** – Current folder.
    - **One level up** – One level up.
    - **Specified folder** – the folder specified by the user, always the same *(until a different folder is specified here)*.

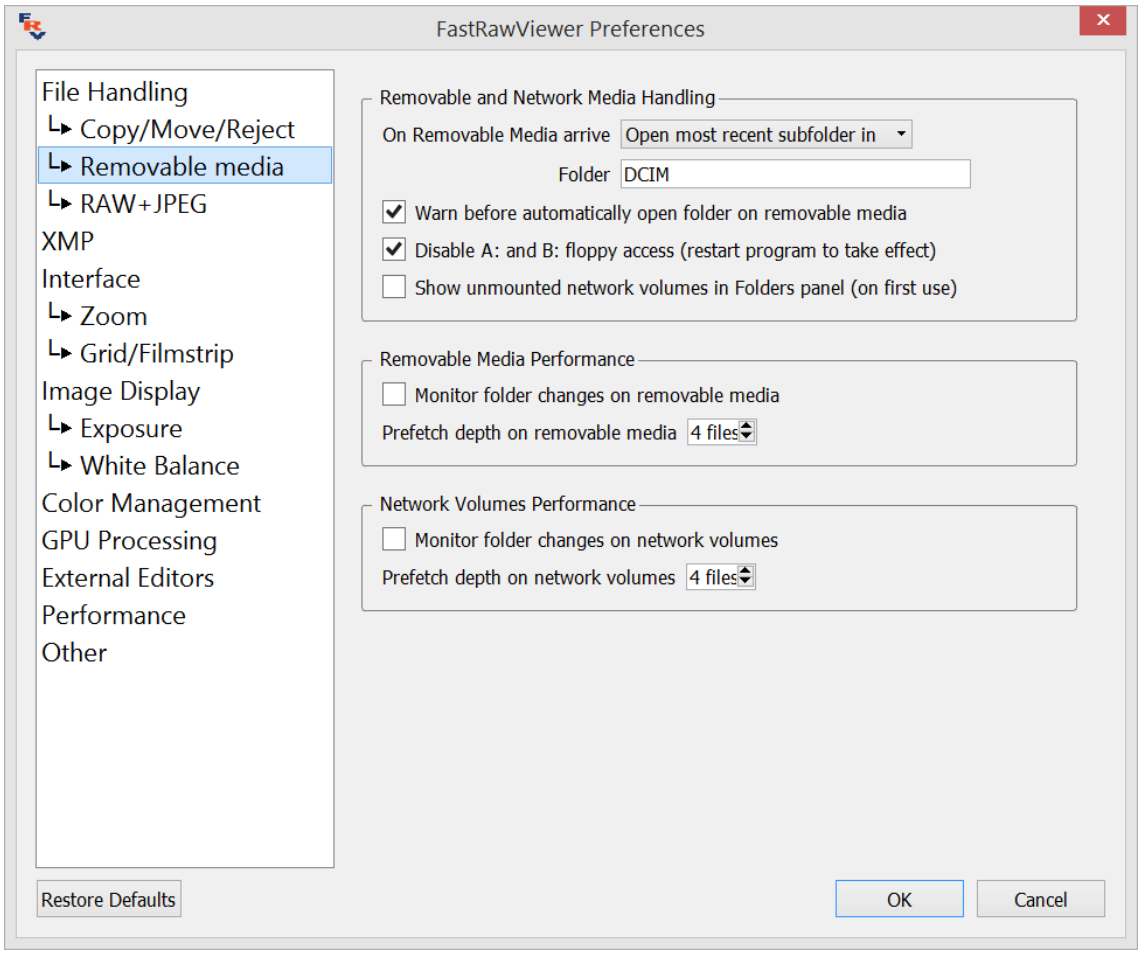
Copy/Move/Reject



- **Use global rejected folder** – sets the folder for Rejected files as a global folder, or as a subfolder in the current folder *(checkbox is unchecked).*
- **Subfolder for rejected files** – the name of the subfolder to store the rejected files.
- **Warn when file(s) are moved to rejected –** customizes the warning settings for when files are moved to the _Rejected subfolder:
  - **No** – never warn me.
  - **Always** – always warn me.
  - **Multiple files** – warn only moving several files to the _Rejected subfolder.
- **Confirm move to the same destination** – customizes the warning about moving a file(s) to the same destination as for the previous operation, with same options as for the setting directly above this.
- **Undo settings –** Customizing the Undo mode:
  - **Clear undo history on folder change –** clears the undo history when the undo is changed.
  - **Undo history length –** sets the number of undo levels.

Removable Media

This group of settings sets the specifics of work with removable media and network volumes.

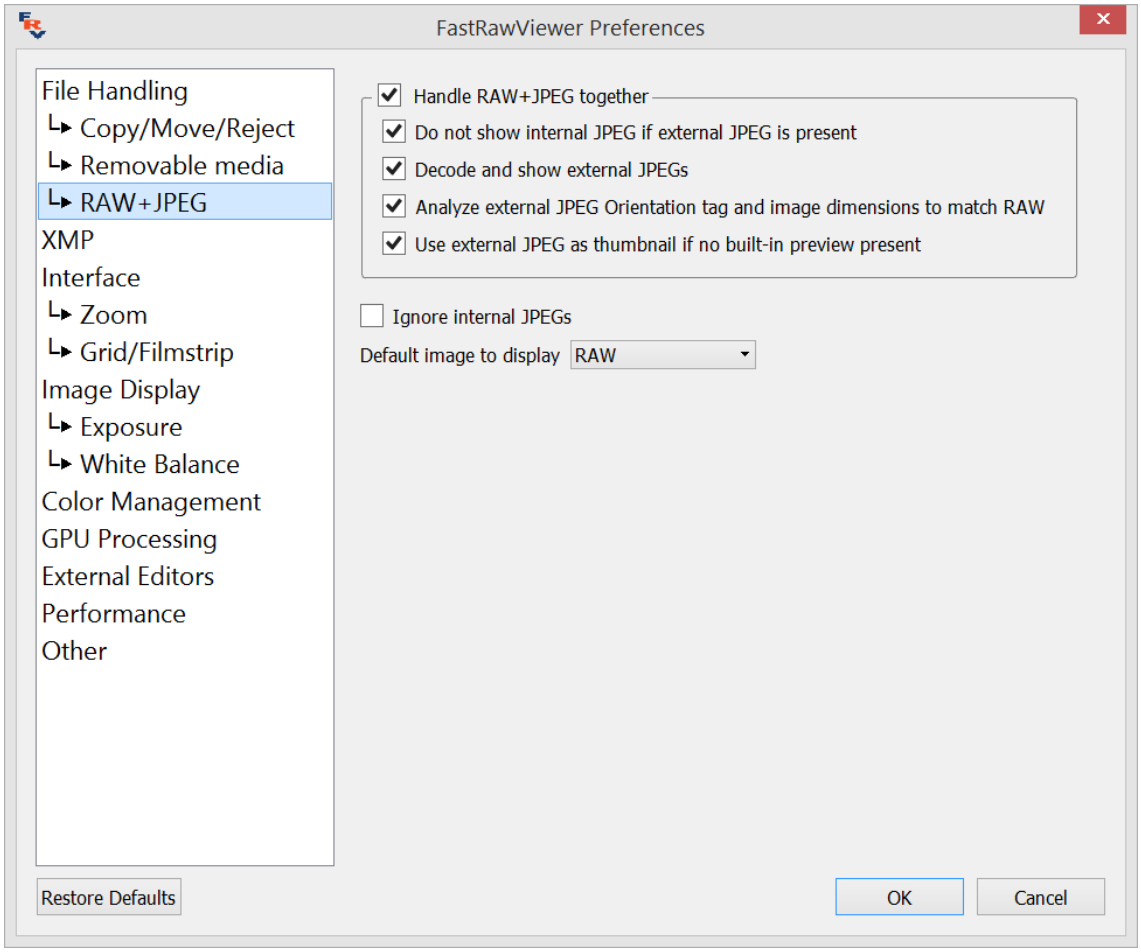


- **On removable media arrive –** what to do when removable media is detected:
  - **Open most recent subfolder in** – opens the most recent *(by date of modification)* subfolder in the selected folder *(/DCIM by default)*.
  - **Open folder** – opens the selected folder.
  - **Do nothing** – Do Nothing.
- **Warn before automatically open folder on removable media –** display a warning before automatically opening a folder on removable media**.**
- **Disable A: and B: floppy access –** prevents any access to the A: and B: drives, as well as monitoring of changing media for those drives ***(Windows** only)*. This preference is intended for the *(fairly common in our day)* case of a computer having a floppy drive controller, and one or two drives being "visible" to the system, though they're not actually present.
- **Preferences – Removable Media – Show unmounted network volumes in Folders panel** – this setting will switch on the display of the contents of the current un-mounted volume in

this panel *(if this setting is Off, the network devices that do not have a drive letter assigned will not be displayed).*

- **Monitor folder changes on removable media/network volumes** – monitor changes in removable media/network volume folders, updating the Folders and Filmstrip panels when new subfolders and files are added.
- **Prefetch depth on removable media/network volumes** – sets how many files to decode before moving to the next file.

RAW+JPEG

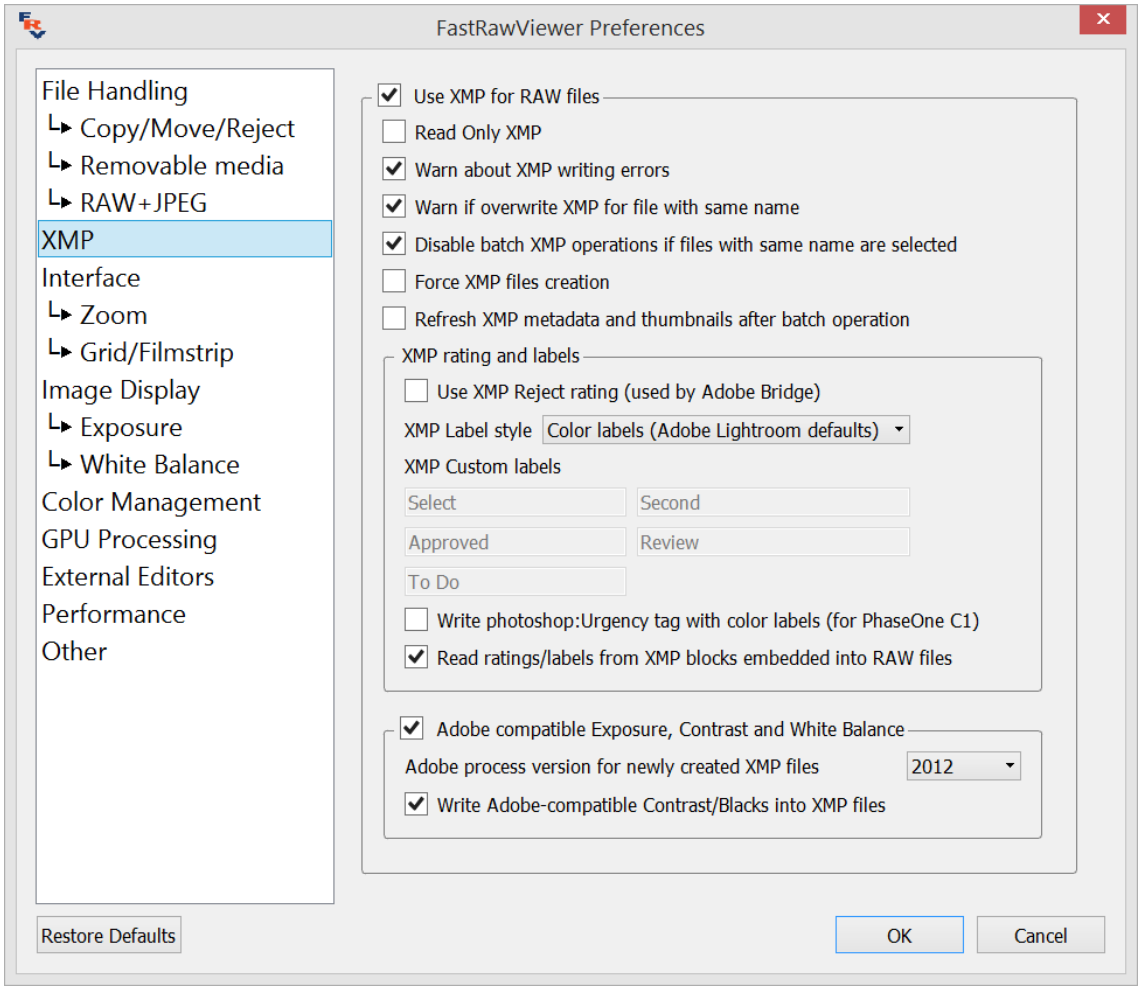


- **Handle RAW+JPEG together** – turns on the pairing of RAW and JPEG of the same name: displaying them as different representations of the same image, and treating them as a single unit for move operations, so that both are relocated to a different folder when a move operation is invoked.
    - **Do not show internal JPEG if external JPEG is present** – removes the embedded JPEG from the list of available representations if there is an external JPEG *(which, usually, has better resolution)*.

  - **Decode and show external JPEGs** – enables the decoding and the display of external JPEG files.
  - **Analyze external JPEG Orientation tag and image dimensions to match RAW** – **FastRawViewer** will rotate the external JPEG if necessary, to match the orientation of the RAW image.
- **Ignore internal JPEGs** – unconditionally disables decoding of embedded JPEG previews. Automatically turns on and disables changing of **Do not show internal JPEG if external JPEG is present** setting.
- **Default image to display** – which representation to display when switching to the next file:
  - **Same as previous** – the same as for the current file.
  - **RAW, internal JPEG, external JPEG** – explicit designation of the representation.

XMP

This group of settings controls the processing of XMP files



- **Use XMP for RAW files** – turns on/off the use of XMP files.
- **Read Only XMP** – turns on the mode, where XMP files are read, but not changed.
- **Warn about XMP writing errors** – informs the user of any errors that occurred during the XMP file recording process.
- **Warn if overwrite XMP for file with same name** – If it is "on", **FastRawViewer** will ask user for confirmation before overwriting an XMP sidecar file containing settings for a file with the same name but different extension.
- **Disable batch XMP operations if files with same name are selected** – If it is "on" (default) and the selected files contain filenames that differ in extension only, the batch editing of XMP (setting or changing orientation, labels, ratings) will be grayed out / disabled in Menu - Select/Batch and in context menu.
- **Force XMP file creation** – turns on the unconditional creation of XMP files, even if no adjustments were changed manually while viewing the RAW file *(those adjustments are*

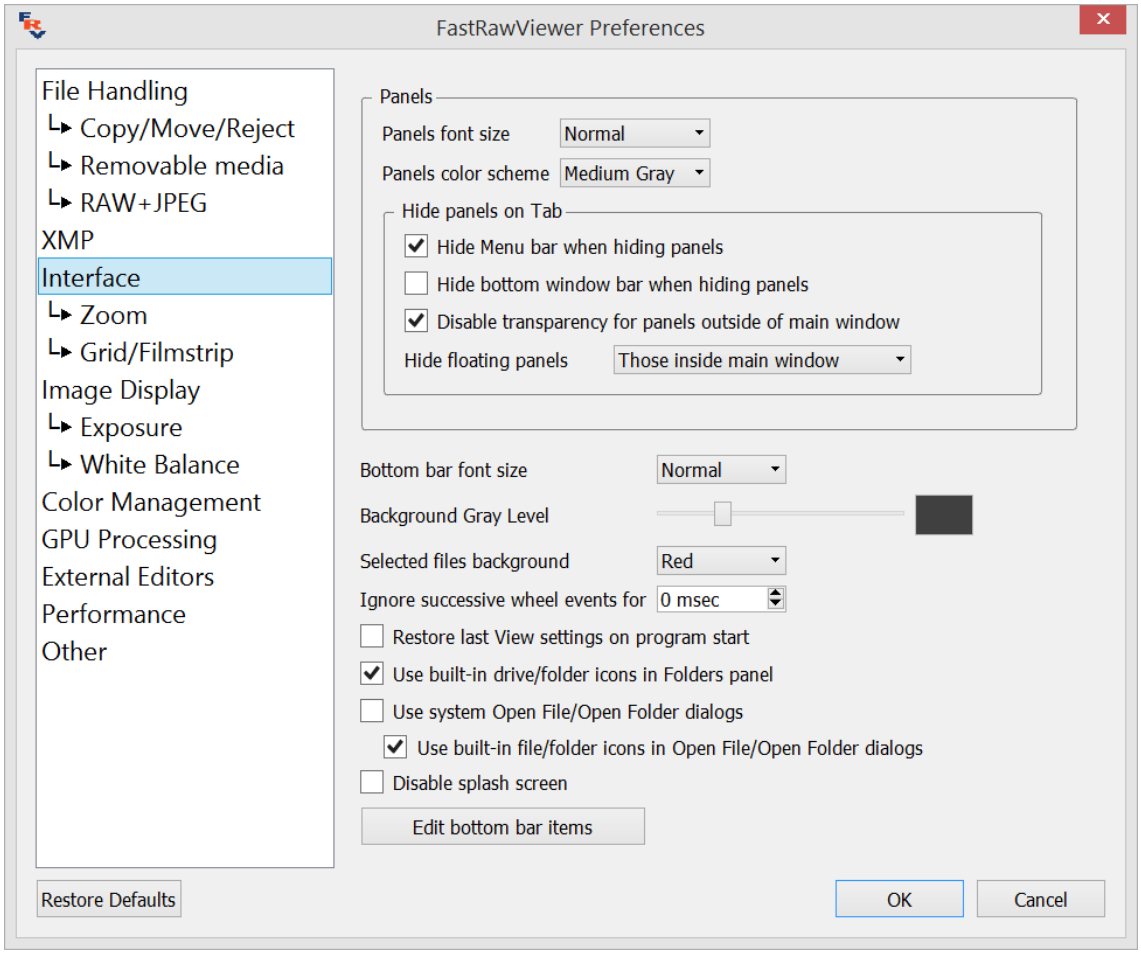
orientation, white balance, exposure adjustment, labels and ratings). Useful for automatic propagation of adjustments to the next file.

- **Refresh XMP metadata and thumbnails after batch operation** – turns on the unconditional rereading of the current folder after an operation over a group of files is preformed.
- **XMP rating and labels Section:**
  - **Use XMP Reject Rating** – turns on the possibility of setting the rating to -1. This rating is supported in Adobe Bridge. The setting is turned on automatically when selecting XMP Label Style: Adobe Bridge.
  - **XMP Label Style** – sets the label format in XMP files:
    - **Adobe Bridge**: Select, Second, Approved, Review, To Do.
    - **Color labels/Adobe Lightroom**: Red, Yellow, Green, Blue, Purple.
    - **Review status/Adobe Lightroom**: To Delete, Color Correction Needed, Good to Use, Retouching Needed, To Print.
    - **Custom** – user labels *(any text you choose).*
  - **Write photoshop:Urgency tag with color labels (for PhaseOne C1)** – Turns on the recording of the XMP-tag photoshop:Urgency, which is used by CaptureOne to recognize and set color labels. The setting is activated only if the mode XMP labels is set in 'Color Labels' *(this is the default).* In other modes, the XMP Labels photoshop:Urgency tag is not modified: if it was in the XMP file, it stays unchanged.
  - **Read ratings/labels from XMP blocks embedded into RAW files** – turns on the reading of XMP blocks embedded in RAW files. For more detail, see the "**Embedded XMP Blocks**" section above.
- **Adobe compatible Exposure and White Balance** – turns on reading and recording into XMP files exposure compensation and white balance in Adobe format:
  - **Adobe process version for newly created XMP files.** Default: 2012, can be set to 2010 or 2003.

    Features:
    - If the tag **crs:ProcessVersion** is set already in XMP file, the version doesn't change and the exposure is written according to the version.
    - If the **crs:ProcessVersion** tag isn't present in XMP file, then it's added in accordance to the setting (*this way, XMP-files created in older versions of **FastRawViewer** and then not changed by ACR/LR will be "upgraded");*
    - For 2012 process, Exposure2012 *(equal to expo correction in **FastRawViewer** plus Adobe Shift)* and the tags Contrast2012, Whites2012, Blacks2012 *(set to 0, if these tags are not present in the file)* are recorded.
    - For the 2003/2010 processes the tags crs:Exposure, crs:Brightness, and crs:Contrast are recorded *(if the file already had the values for those tags, they are preserved, otherwise they are set to 0).*
  - **Write adobe-compatible Contrast/Blacks into XMP files** – enables the recording of the contrast settings in the Adobe-compatible format.

Interface

The group of settings to control the user interface.



Panels group

- **Panel's font size**: sets the font size in the informational panels.
- **Panels color scheme** – sets the brightness of the panel background.
- **Hide Menu bar when hiding information panels** – for the hide informational panels mode *(Tab),* controls if the menu bar should be hidden too.
- **Hide bottom window bar when hiding information panels** – hide main program window status bar in 'hide information panels' *(Tab key)* mode.
- **Disable transparency for panels outside of main window** – allows disabling transparency for informational panels that are placed completely outside the main program window.
- **Hide floating panels** – controls floating (not "docked") informational panels behavior on **Menu-Panels-Hide All panels** action:
    - **Hide all** – hide all panels
    - Those inside main window – hide only panels, that float within main program window

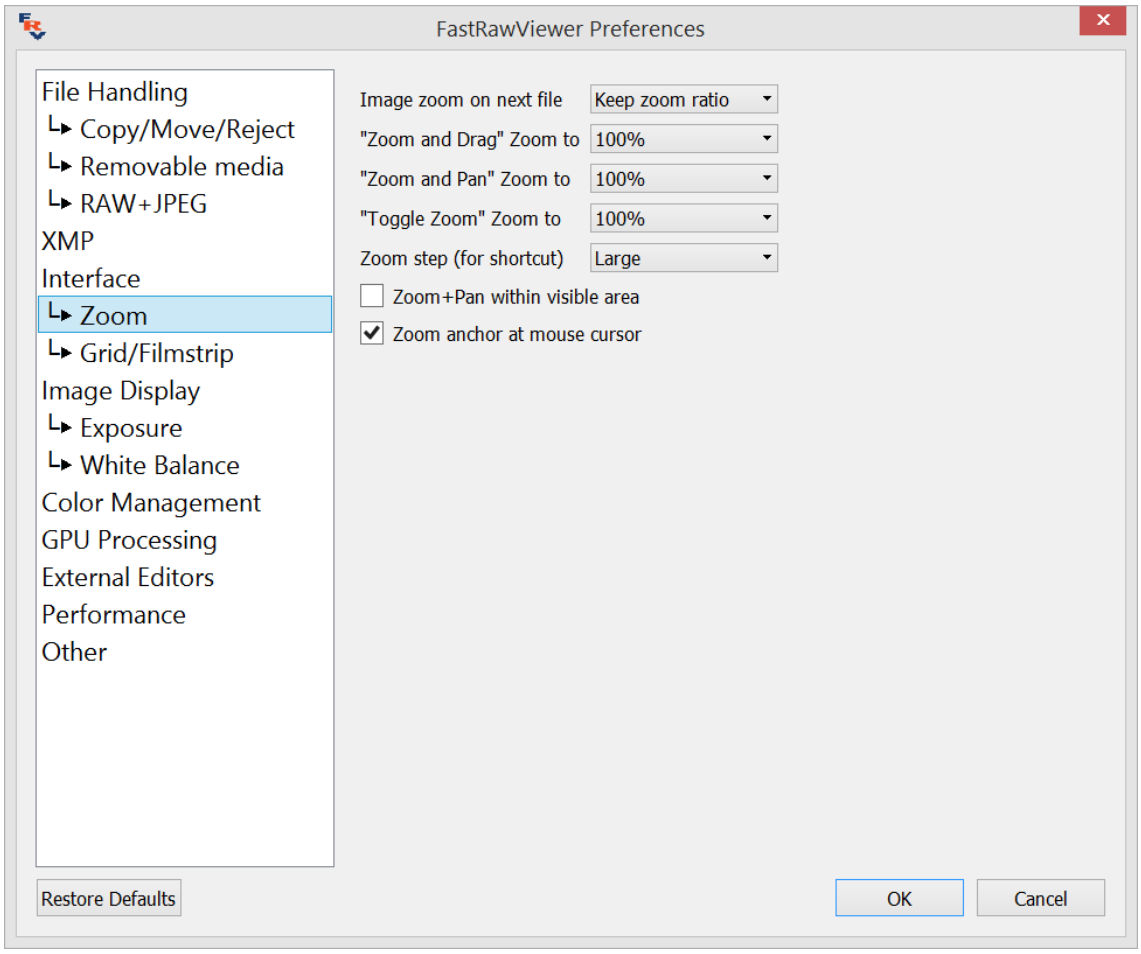
- Do not hide – do not hide floating panels

Further Settings

- **Bottom bar font size** – controls bottom bar font size *(Small – Extra Large on Windows and Normal – Extra Large on OS X)*.
- **Background Gray level** allows you set the brightness of the main program window background.
- **Selected files background –** allows one to set the background color for selected files.
- **Ignore successive wheel events for NN msec** – this setting is designed to tame the stream of events generated by mouse wheel, Apple Magic Mouse, or trackpad.
- **Restore last View settings on program start** – when closing the program the following image display parameters are saved *(independent of the status of the settings):*
  Display mode (RGB, per-channel, BW Conversion)
  Focus Peaking mode
  Boost Shadows mode
  Exposure correction on/off

  If **'Restore last View settings**' is turned on, then during the next start-up of the program, the above-listed parameters will be in effect.
- **Use built-in drive/folder icons in Folders panel** – show icons built-in into **FastRawViewer** in the Folders panel *(in several cases, using the system's icon can lead to problems).*
- **Use system Open file/Open folder dialogs** – switches between standard and smaller dialogs when opening files/folders.
  - **Use built-in file/folder icons in Open File/Open Folder dialogs –** when using non-system dialogs for opening files/folders – use built-in icons.
- **Disable splash screen** – switches off the display of logo at **FastRawViewer** start.
- **Edit bottom bar items** – launches the dialog that allows one edit the composition of the program's bottom bar.

Zoom



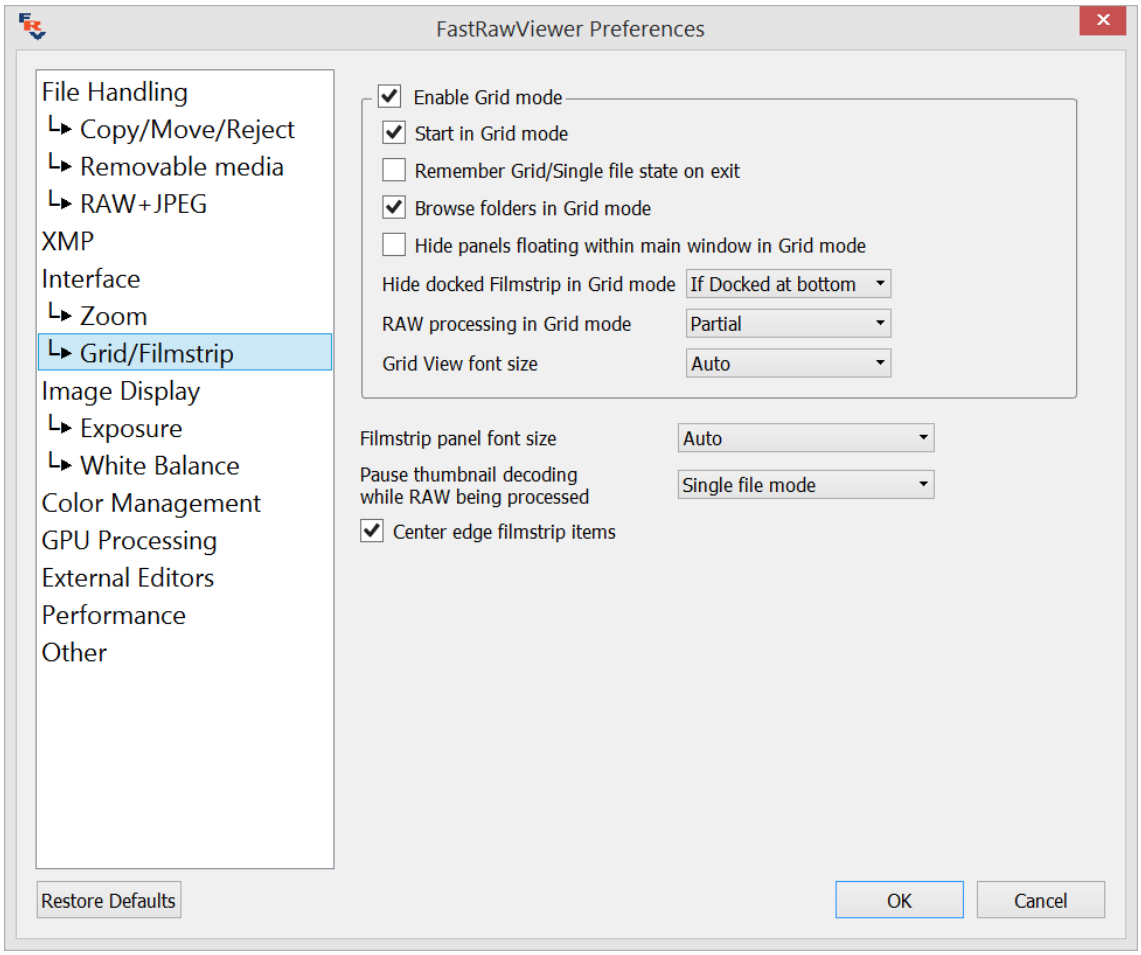
- **Image zoom on next file** – sets the zoom factor to be used when displaying the next file:
  - **Keep zoom ratio** – will keep the zoom factor.
  - **Keep image width** – will keep the visible width of the image
  - **Fit to window** – the Fit to screen mode will be turned on.
- **Zoom and Drag Zoom to** – sets zoom factor to use in the Zoom and Drag mode *(Shift – left mouse click).*
- **Zoom and Pan Zoom to** – sets zoom factor to use in the Zoom and Pan mode *(Shift – right mouse click).*
- **Toggle Zoom Zoom to** – sets the magnification/zoom level used for the Toggle Zoom (Z) mode.
- **Zoom step (for shortcut)** – controls the zoom step for keyboard *(and mouse)* shortcuts:
  - **Large** – fixed zoom step value of about 50%, to be used for keyboard control.
  - **Medium** – zoom step is set to 20%.
  - **Small** – zoom step is set to 5%.

The last two settings are designed to be used while zooming with the Mouse Wheel or trackpad.

- **Zoom+Pan within visible area** – if this setting is on, then the panning will take place inside the area visible before the start of the panning. If it is off, then the panning will be over the entire image.
- **Zoom anchor at mouse cursor –** zooming will happen taking the position of the mouse cursor into account; the point underneath it will retain its position respective of the window during zooming.
- **Use Logical pixels for zoom calculation** *(Mac OS X only):*
    - If turned on *(default, "legacy" behavior)*, then the pixel in the screen is considered to be the "logical pixel" *(in the case of Retina, it's a block of 2x2 "physical" pixels)* and the calculation of the zoom size is done in these units.
    - If turned off, the zoom value is calculated in "physical pixels", so for Retina screens the displayed zoom value will now be doubled, and at 100% zoom the image will be half the size compared to "legacy" behavior.

Grid/Filmstrip

The settings in this group control the display of the image in Grid mode and the Filmstrip panel**.**

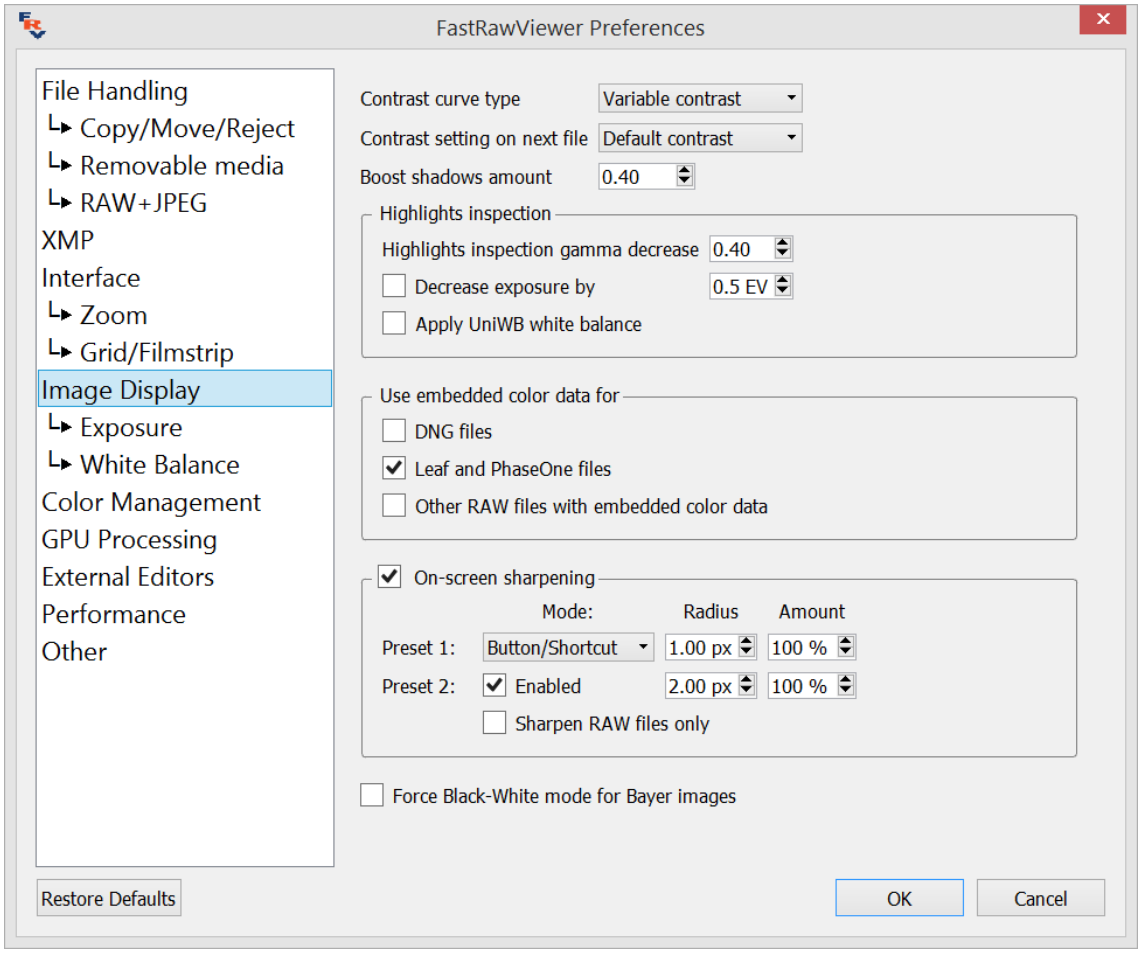


- **Enable Grid mode** – Turns on/off support for Grid Mode. You must restart the program for the change to take effect.
- **Start in Grid mode** – when launched without passing a filename, **FastRawViewer** will start in **Grid** mode.
- **Remember Grid/Single file state on exit** – turns on restoration of the previous mode for the next time **FastRawViewer** is launched.
- **Browse folders in Grid mode** – when moving from the current folder to another one, **FastRawViewer** will switch to Grid Mode.
- **Hide panels floating within main window in Grid mode** – if the setting is on, all floating panels in the Grid Mode that are currently positioned inside the program's main window will be hidden; they will reappear when switching to Single File View Mode.

- **Hide Filmstrip in Grid mode** – customizes the visibility of the Filmstrip panel in Grid Mode *(the Filmstrip panel can be brought back to display through **Menu – Panels – Filmstrip**):*
    - **No** – do not hide the Filmstrip panel
    - **If Docked at bottom** – if the Filmstrip panel is at the bottom of the program window, it will be hidden upon switching to Grid Mode. The setting has no effect for a Filmstrip that is anywhere else.
    - **If Docked anywhere** – the Filmstrip panel will be hidden if it is located in one of the main dock areas of the main window *(at the top, at the bottom, and on the left).* If the Filmstrip panel is dragged out of the main window, it will stay visible after switching to Grid Mode.
- **RAW processing in Grid mode** – customizes the RAW decoding when Grid Mode is enabled and RAW decoding is switched on through the Show Histogram/Stats/EXIF icon:
    - **Partial** – only partial decoding is preformed, enough for displaying the exposure statistics and histogram. In this mode, browsing files happens faster.
    - **Full** – full decoding is preformed, and switching to Single File view mode is nearly instantaneous.
- **Grid View Font size, Filmstrip panel font size** – to set the size of the fonts for the Grid View and Filmstrip panels:
    - **Auto** – the font size is set automatically, based on the setting for the Panel Font size and the preview size.
- **Extra small…Extra Large** – the font size is set to the same as that of the Panels *(using the same setting)*.
- **Pause thumbnail decoding while RAW being processed** – this control allows one to set priorities between the decoding of preview files and the decoding of RAW data *(these two processes compete for CPU resources and hard drive access)*:
    - **No** – concurrency; Thumbnail decoding is not postponed while RAW decoding takes place.
    - **Single file mode** – Thumbnail decoding is postponed in Single File View Mode until the RAW decoding is finished.
    - **Single file and grid modes** – Thumbnail recording is postponed for any RAW decoding action.
- **Center edge filmstrip items** – controls what happens when the first or the last visible image in the Filmstrip is selected. If on, the Filmstrip is moved in such a way that this image is placed in the center of the visible portion of the Filmstrip.

Image Display

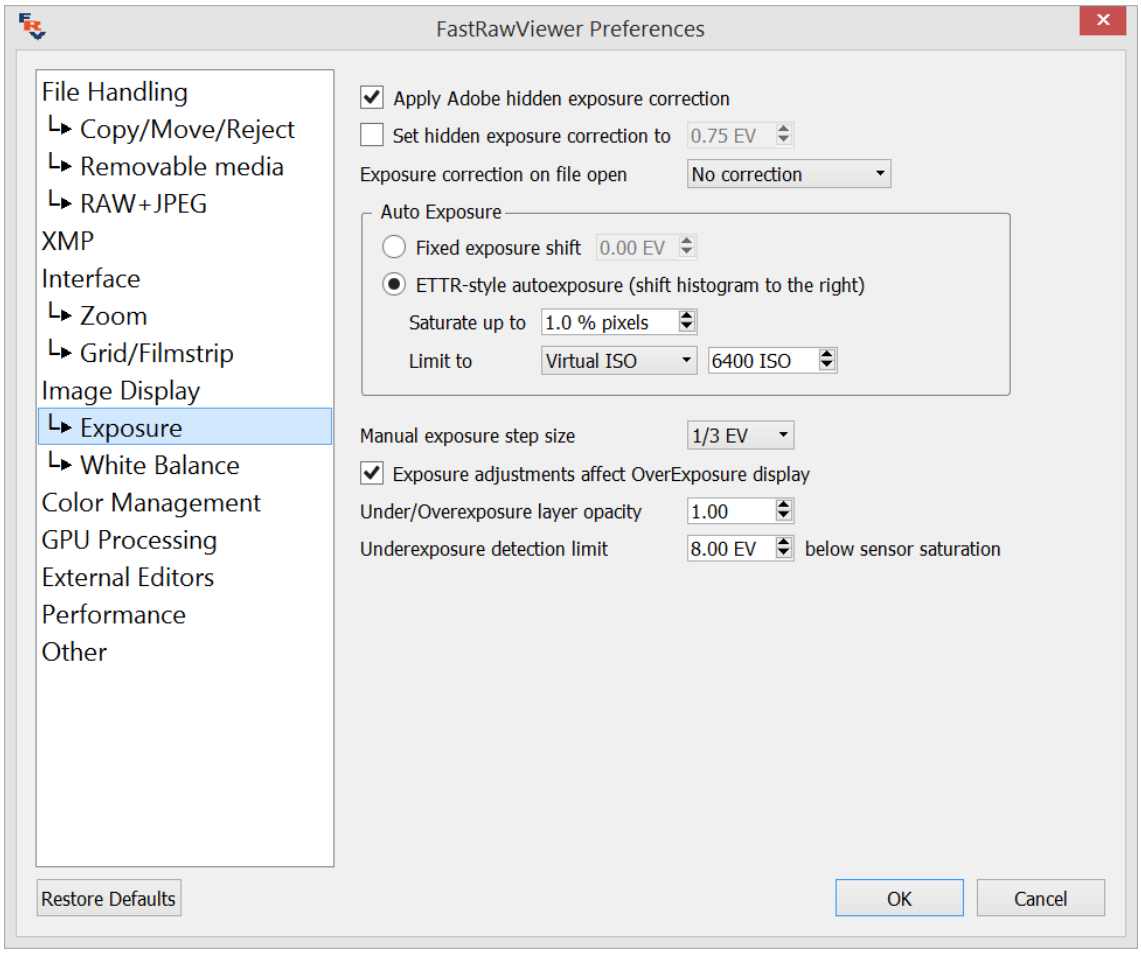
The settings in this group control the processing and the display of the images *(except for white balancing, as the WB settings are in a separate group).*



- **Contrast curve** – sets the tone curve to be used when displaying the image:
  - **Gamma 1.8, Gamma 2.2, sRGB, L*** - sets one of the standard tone curves, typically used in image editing.
  - **Variable contrast** – corresponds to the variable tone/contrast curve, see **Adjusting image contrast** section for details.
- **Boost shadows amount** – controls the additional gamma adjustment while in Boost Shadows mode, the range is 0.2 to 2.0.
- **Highlights inspection** – this group of settings controls the Highlight Inspection mode:
  - **Gamma decrease** – the amount by which the Gamma for the image will be reduced.
  - **Decrease Exposure by** – additional image darkening.
  - **Apply UniWB white balance** – White Balance will be substituted with UniWB, thus avoiding any possible clipping caused by White Balance.

- **Use embedded color data for** – controls the use of color data embedded into RAW files and allows using that data instead of data that comes with **FastRawViewer.**
- **On-screen sharpening** – enables sharpening for display.
    - **Preset 1/Mode**:
        - **Always on** – sharpening for display is always on
        - **Button/Shortcut** – turns on when the button is press.
    - **Preset 2/Enabled** – allows one to use a second group of parameters for sharpening, thus cycling will be between *Off-Preset1-Preset2* or *Off-Preset1.*
    - **Radius** – the radius the Unsharp Mask filter, which closely correlates to the Radius parameter in Adobe Photoshop USM settings.
    - **Amount** – the strength of the sharpening, same as Amount Photoshop USM amount.
    - **Sharpen RAW files only** – if this setting is on, the sharpening for display will affect RAW files only.
- **Force Black-White mode for Bayer images** – turns on the black'n'white mode for color cameras. This mode is intended for modified cameras, where the color filter array is removed.

Exposure



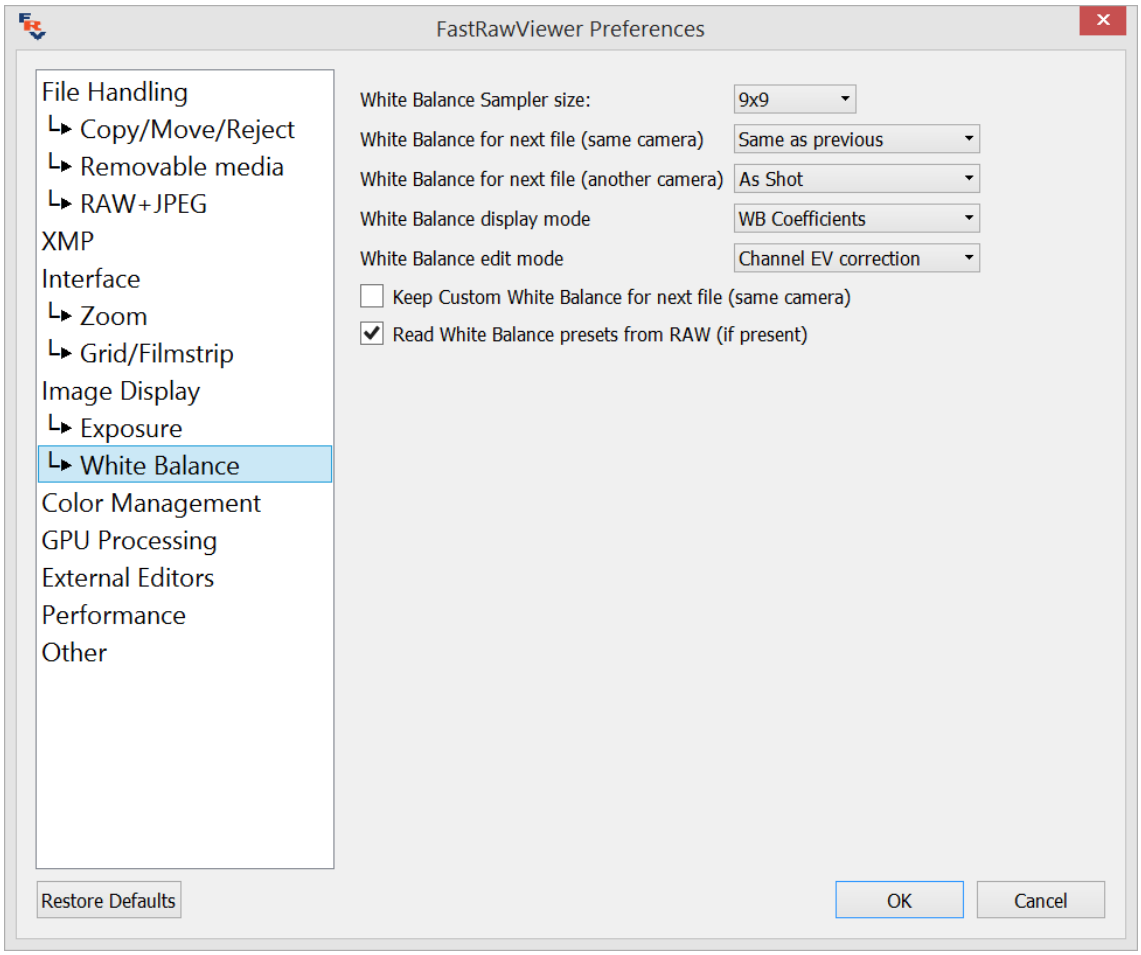
- **Apply Adobe hidden exposure correction** – switches ON the automatic exposure correction similar to the one used by Adobe RAW converters, such as Camera Raw and Lightroom. With this correction ON, same values in exposure correction will result in overall image brightness being similar between Adobe converters and **FastRawViewer**.
- **Set hidden exposure correction to** – allows setting a user-defined value for the hidden automatic exposure correction. Often this is not necessary, as **FastRawViewer** already comes with the corrections for all cameras supported in Adobe converters.

- **Exposure correction on file open:**
  - **No correction** – no additional exposure correction *(apart from the Adobe-style one, if it is ON)* is applied when a file is opened, unless the correction is found in the accompanying XMP sidecar file.
  - **Autoexposure** – automatic exposure correction is applied, according to the settings listed below.
  - **Keep from prev. file** – the new file will be opened with the same exposure correction that was set for the previous file *(it does not matter here how that exposure correction was set, manually or automatically).*
- **Auto Exposure** – controls the automatic exposure correction *(the one that is applied when 'automatic correction' action is performed).*
  - **Fixed Exposure Shift** – the exposure is shifted by the fixed value.
  - **ETTR-style autoexposure *(shift histogram to the right)*** – positive exposure correction that forces the saturation of the given percentage of pixels *(those saturated pixels are having value of 255 on the 8-bit scale)*; the percentage is controlled through **Saturate up to %NN of pixels** setting.

    The amount of the positive exposure correction shift is limited by the 'Limit to' setting:
    - **Unlimited** – no limit
    - **Hard limit** – the limit is set to the given amount.
    - **Virtual ISO** – limits the automatic exposure correction, taking into account the ISO setting in the camera. For example, if the current shot is taken at ISO 400 setting in the camera, while auto limit is set to ISO 6400 *(the default value)*, the positive exposure correction is limited to *(6400/400 =)* 16 times, or, in photographic units, to 4EV.
- **Manual exposure step size** – sets the step of manual exposure adjustment change.
- **Exposure adjustments affect OverExposure display** – when turning on this setting the change in exposure adjustment *(both automatic and manual)* will affect the display of overexposed areas.
- **Under/Overexposure layer opacity** – controls the perceived contrast of the highlighting for over- and underexposed areas.
- **Underexposure detection limit NN EV below sensor saturation** – sets the "usable dynamic range" of the camera. Everything below this limit will be displayed as underexposed.

White Balance

This group contains all the white balance processing controls:



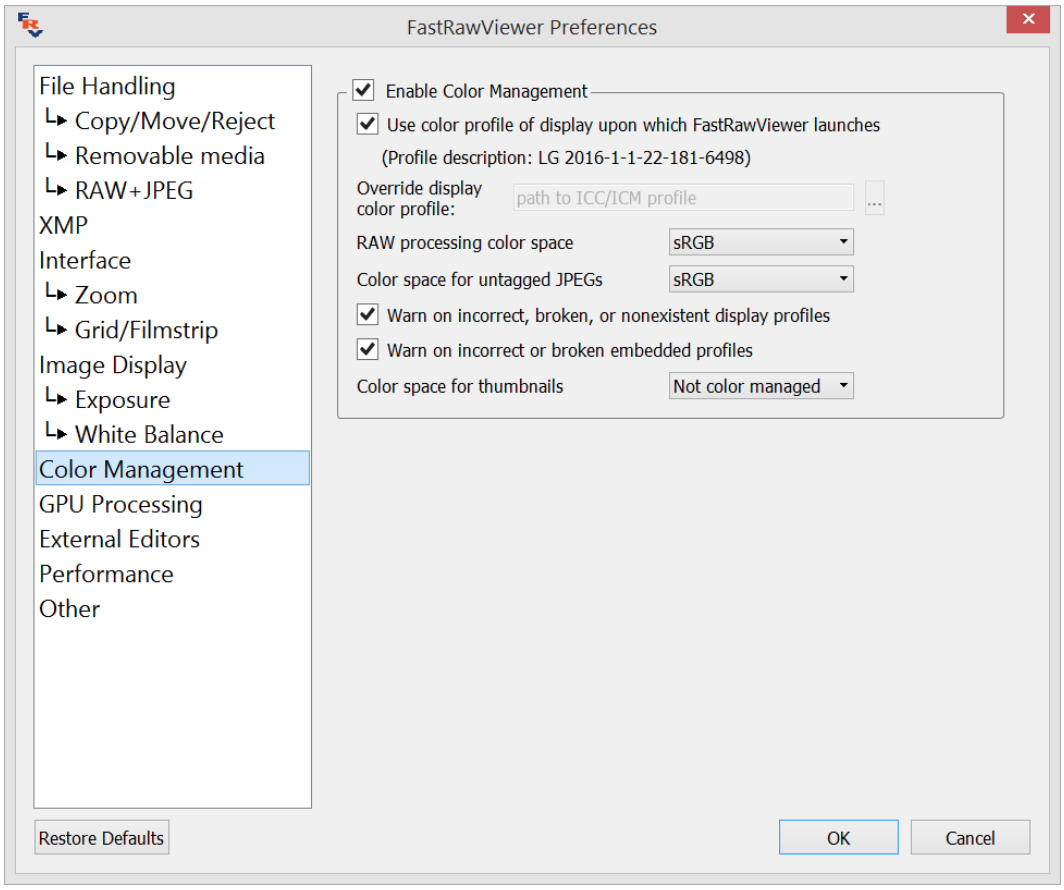
- **White Balance Sampler size** – for "click-on-gray" *(Alt-Click)* method, sets the size of the area used to evaluate the white balance
- **White Balance for next file (same camera)** – sets the white balance mode when opening a file coming from the same camera model as the current file. Choices here are:
  - **Same as previous** – keep the current white balance choice.
  - All others – the respective white balance mode will be in effect.
- **White Balance for next file (another camera)** – sets the white balance mode when opening a file coming from a different camera model.
- **White Balance display mode:**
  - **Color Temperature/Tint** – a mode commonly used in many RAW converters, including those by Adobe
  - **Mired/Tint** – instead of correlated color temperatures, the value indicated is in Mired. Useful for selecting color filters to be used on the lens and on studio lights.

  - **WB Coefficients** – the per-channel multipliers for white balance are indicated.
  - **Channel EV Correction** – per-channel correction in EV *(stops)* for white balance are indicated.

- **White Balance edit mode:**
  - **Color Temperature/Tint** – a mode commonly used in many RAW converters, including those by Adobe
  - **Channel EV Correction** – per-channel correction in EV *(stops)* for white balance are indicated.
- **Keep Custom WB for next file (same camera)** – instructs **FastRawViewer** if the current white balance coefficients should be applied to the next file coming from the same camera model.
- **Read White Balance presets from RAW (if present)** – turns on reading white balance tables from RAW files.

Color Management

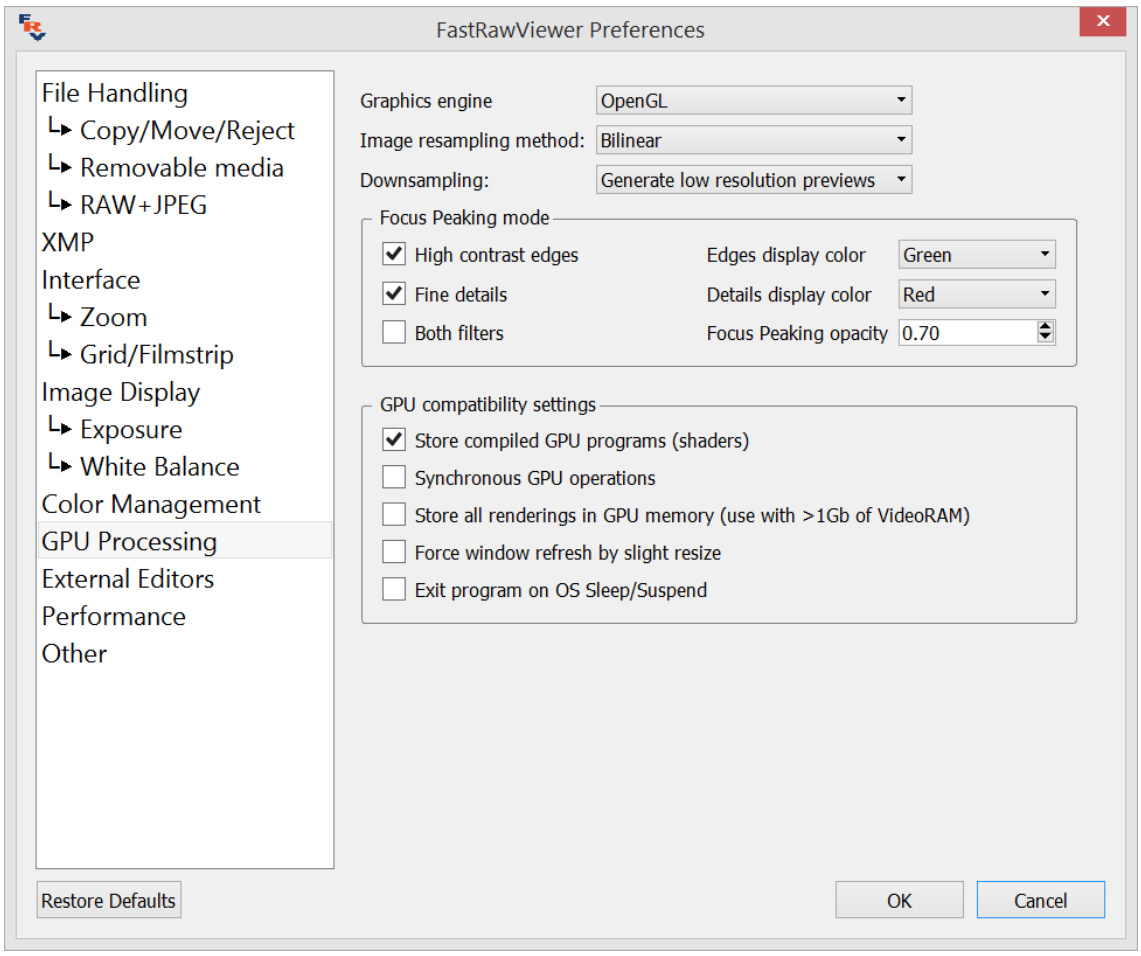
This group of settings controls the appearance of the color on-screen in respect to color management:



- **Enable Color Management** – turns on ICC-compatible color management.
- **Use system profile (for monitor where program starts)** – the ICC profile chosen in the system for that monitor where the program is being started will be used as the profile for the monitor.
- **Display Color profile** – allows one to specify a file with the ICC profile for the monitor.
- **RAW processing color space** – allows one to set a color space in which the last steps of the RAW data processing are done *(the first steps are performed in the camera's color space).*
- **Color space for untagged JPEGs** – allows one to set a color space for JPEG files for which the color space is not specified *(not recorded in EXIF tags or ICCProfile of JPEG sections)*.
- **Warn on incorrect, broken or nonexistent display profiles** – turns on a warning for when one tries to use an incorrect display profile.
- **Warn on incorrect or broken embedded profiles** – turns on a warning for incorrect profiles built into the JPEG data.
- **Color space for thumbnails**: sets the mode for color space for previews *(thumbnails)*.

GPU Processing

This group controls the video card modes and how the sharp areas of the image will be displayed.



- **Graphics Engine** *(Windows only):* sets the method of using the graphics hardware acceleration: DirectX 9, DirectX 11 *(Windows7 and newer),* OpenGL, OpenGL emulator. The last option can only be set through an external script, as it results in extremely low performance, and can be selected only for the purposes of testing.
- **Image resampling method**:
  - **No resampling** – for large zoom factors, the image will look as if it is constituted of small square tiles. The fastest method.
  - **Bilinear resampling** – pretty fast, mid-quality method
  - **Bicubic resampling** – high-quality method, can be slow, a relatively fast vast video card is recommended.
- **Downsampling options**:
  - **None** – no additional processing, the downsized image may have a low quality look.

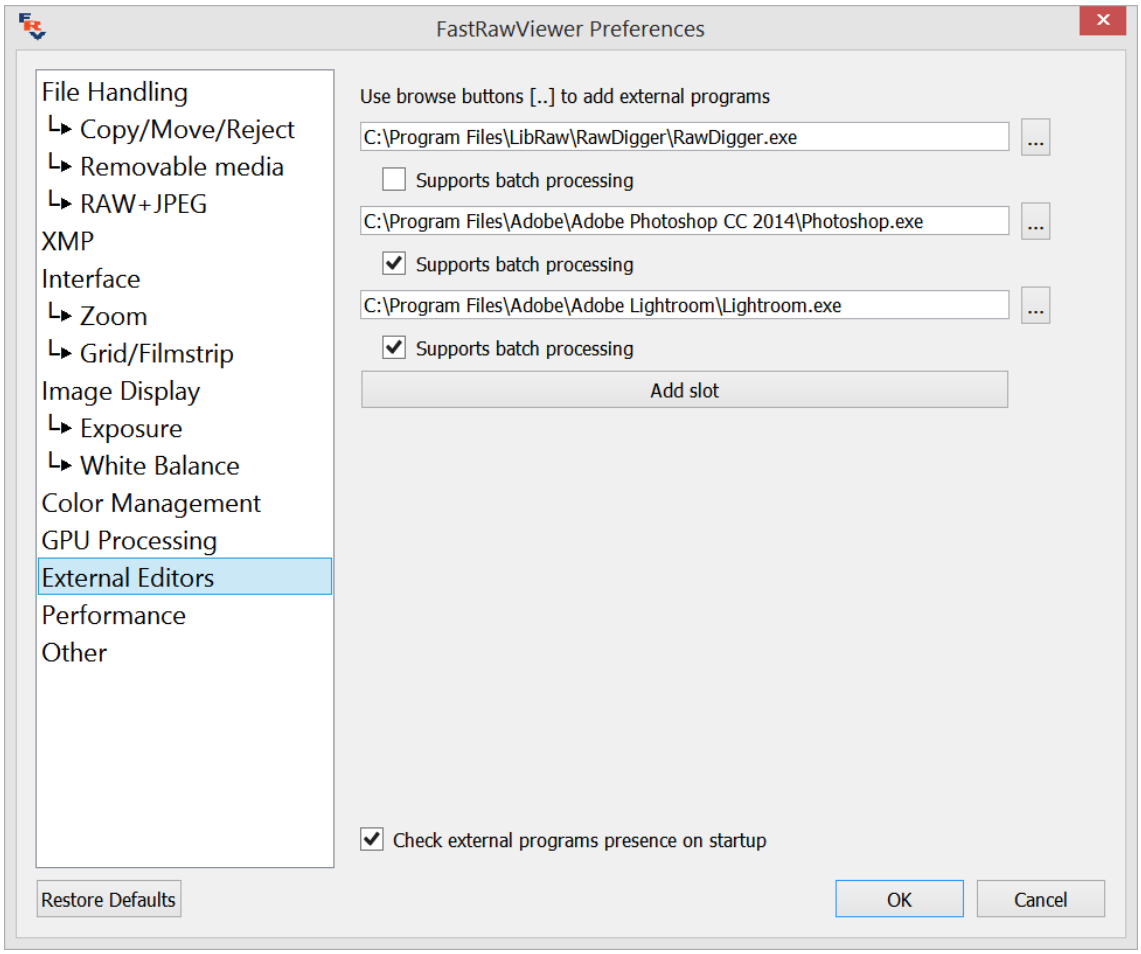
  - **Generate low resolution previews** – low-resolution previews are rendered in advance with the help of video card driver.
    Requires additional memory for the graphic textures, compatible with all video cards.
  - **Suppress downsampling artifacts** – suppresses the colored noise on the high ISO images. Not supported on all video cards.

- **Focus peaking mode**:
  - **High contrast edges** – enables the outlines for contrasty details using color contouring. **Edges display color** sets the color for the contours.
  - **Fine details** – enables the outlines for the areas with plenty of smaller sharp details using color contouring. **Details display color** sets the color for the contours.
  - **Focus Peaking layer opacity** – controls the fading of the main image for the Focus Peaking contours to be visible better.

- **GPU compatibility settings**

  This group of settings is helps with the cases when certain compatibility problems are encountered *(for instance, the image is not completely refreshed):*
  - **Store compile GPU programs (shaders)** – on those video cards on which this is supported, compiled GPU programs will be saved on the disk during the first startup. Program will start faster ever after.
  - **Store all renderings in GPU memory** – if the setting is on, all of the file representations *(RAW, internal JPEG, and external JPEG)* will be stored in the video memory, right after the first use; this makes switching between RAW and JPEG for the same file nearly instantaneous.
  - **Synchronous GPU operations** turns on the synchronous mode of video card work (slower, but more reliable).
  - **Force window refresh by slight resize** – turns on bouncing to force image redraw
  - **Exit program on OS Sleep/suspend** – forces the program to exit when the computer goes to sleep *(that is to address the issue with some older OS being unable to correctly restart OpenGL operations after the wake up).*

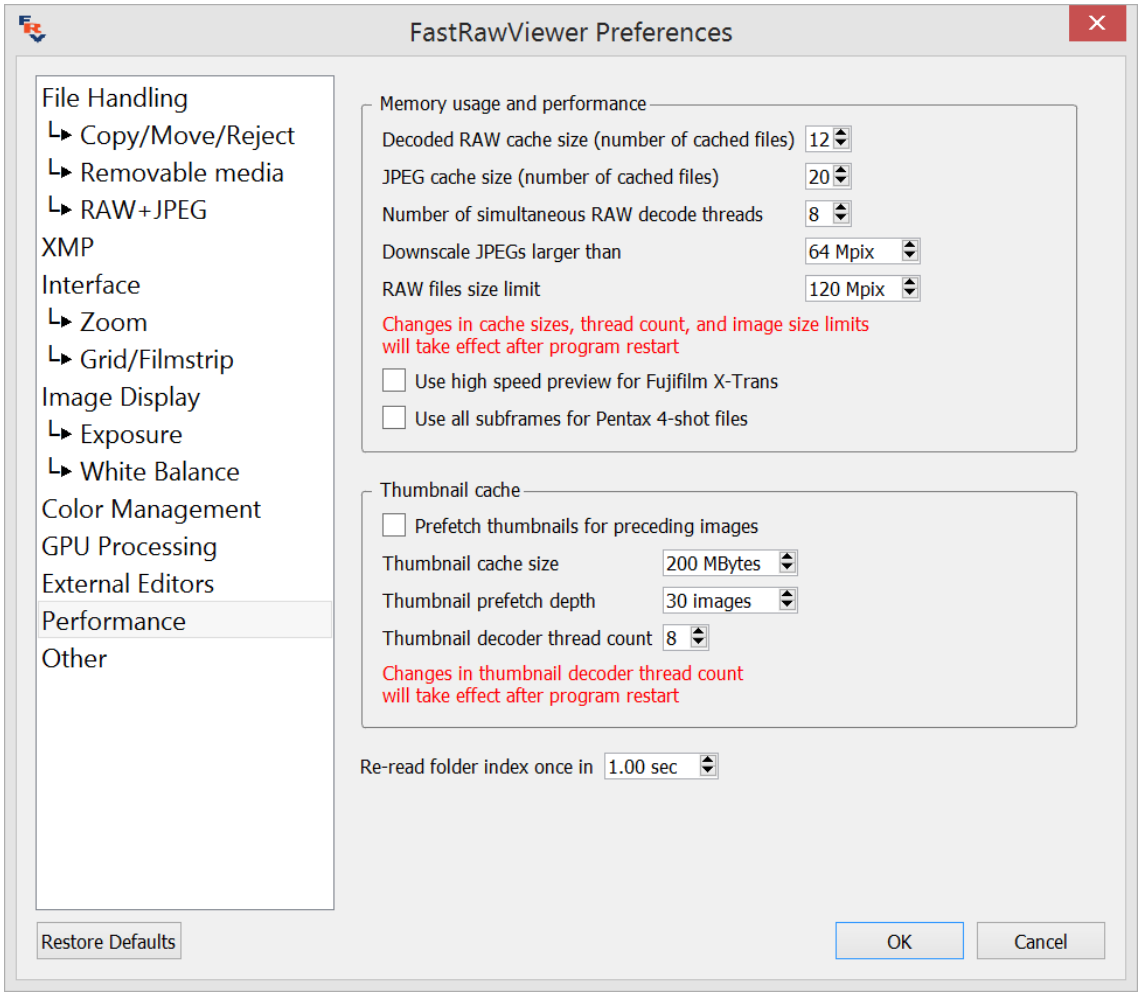
External Editors



This window displays the paths to external programs. **FastRawViewer** can launch those, passing to them the name of the currently displayed file.

- Supports batch processing: if this checkbox is marked for the program, then this program will be included in both **Menu – Select/Batch – Batch Run program** and in the context menu for groups of files.
- Use **[…]** buttons to lookup executable file on your system.
- **Add slot** button adds additional slot for external program *(up to 10).*
- **Check external programs presence on startup** enables check each program existence on **FastRawViewer** start.

Performance



Memory usage and performance Group

- **Decoded RAW cache size –** the number of decoded RAW files that are kept in the operational memory (RAM) to boost the speed of the browsing.
- **JPEG cache size** – the number of JPEG files that are kept in the operational memory to boost the speed of the browsing.
- **Number of simultaneous RAW decode threads –** the number of concurrent processes of RAW decoding.
- **Downscale JPEGs larger than NN Mpix** – JPEG files larger than the specified size will be down-sampled during the decoding process, so less memory will be required, while decoding and display will happen faster.
- **Do not decode RAW files larger than NN Mpix –** RAW data with a pixel count more than the specified will not be decoded; only an internal JPEG will be shown *(if it exists)*

All changes made to this group of settings come into effect only after restarting FastRawViewer.

- **Use high speed preview for Fujifilm X-Trans –** this preference turns on faster *(but lower quality)* processing for files created by Fujifilm X-Trans sensors.

  This mode is recommended if you are not satisfied with the display rate of these files in standard mode.

  Automatically turns on during the first start-up, and when resetting to default the preferences if the system has one of the following processors:

  - **Intel Core2Duo** and older.
  - **Intel i3-i7 1st generation** with fewer than 4 cores.

- **Use all subframes for Pentax 4-shot files** – enables merging all subframes into one when working with Pentax frames shot in Pixel Shift mode.

Thumbnail cache Group:

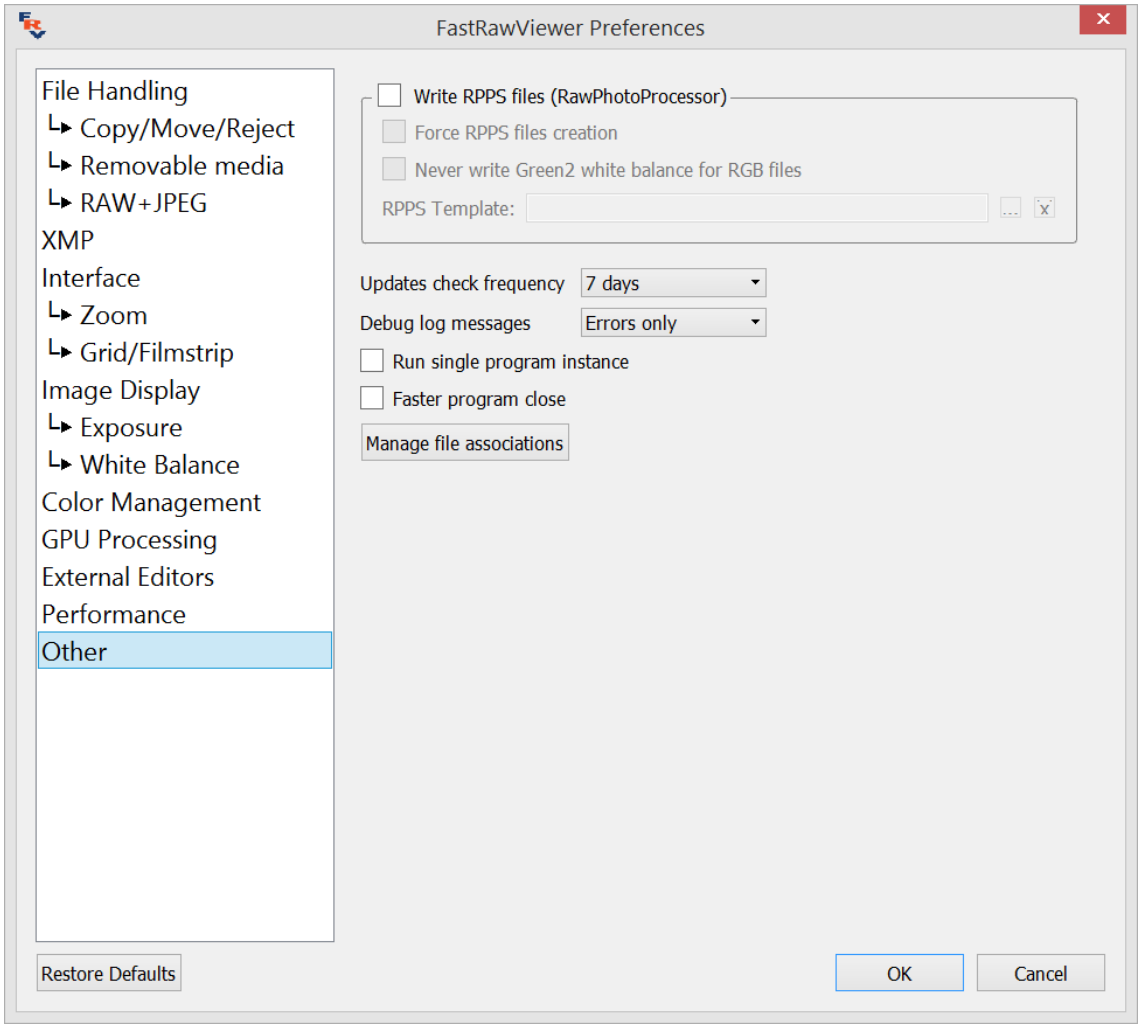
- **Prefetch thumbnails for preceding images**: to decode previews for the files "before" those visible on the screen.
- **Thumbnail cache size**: maximum size of the cached previews in the memory *(each preview is stored in 4-byte per pixel format, so standard 200x133 preview is about 100kb, so 200Mbytes cache limit translates to ~2000 images)*.
- **Thumbnail prefetch depth**: how many files *(relative to those viewed on the screen)* to read ahead and decode previews.
- **Thumbnail decoder thread count**: how many parallel decode streams *(threads)* are enabled.

Other settings:

- **Re-read current folder in** – sets the refresh rate for the list of files in the current folder *(if the folder changes, for instance other files are copied into it, then it won't be reread very often).*

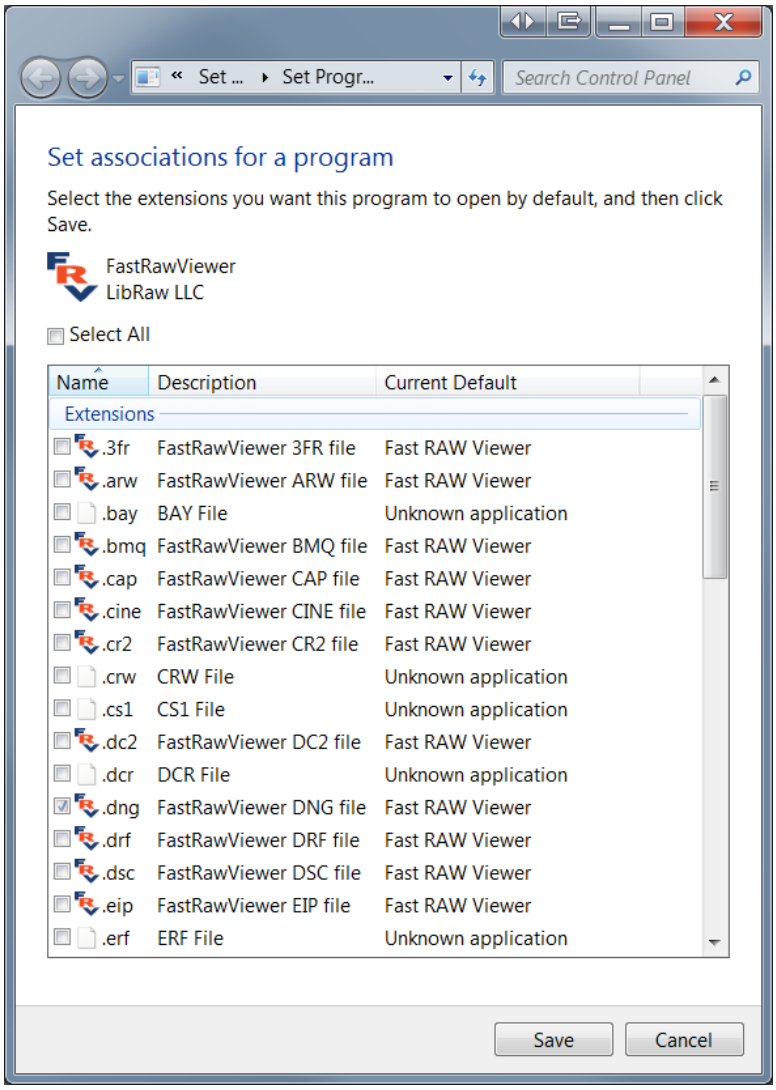
Other

This section contains other settings that cannot be grouped with any other preceding group:



- **Write RPPS files** – saves an .rpps file *(for RawPhotoProcessor)* if manual changes of WB/exposure are applied to the image
    - **Force RPPS files creation** – saves an .rpps file with automatic settings for WB/Exposure when a RAW file is opened.
    - **Never write Green2 white balance for RGB files** – switches off the recording of the separate white balance coefficient for the second green channel.
    - **RPPS Template** – the name of the file that will be used as a template while creating specific .rpps files (used if .rpps file does not yet exist for the raw file).
- **Check for updates** – this parameter schedules the checks for updates - at each program launch or once in every 1-3-7-15-30 days.

- **Debug log messages** – turns on the debug mode, the debug messages are available through Menu – Help – Debug log.
- **Run single program instance** – *(Windows only)* turns on the "one instance" mode of the program. At an attempt of starting the second instance, the file is displayed in the already existing program window.
- **Faster program close** – *(Windows only)* turns on the fast program completion mode.
- **Manage File Associations** – *(Windows-only, not supported in Legacy Windows version)*: activates the system dialogue to edit file association with **FastRawViewer**:



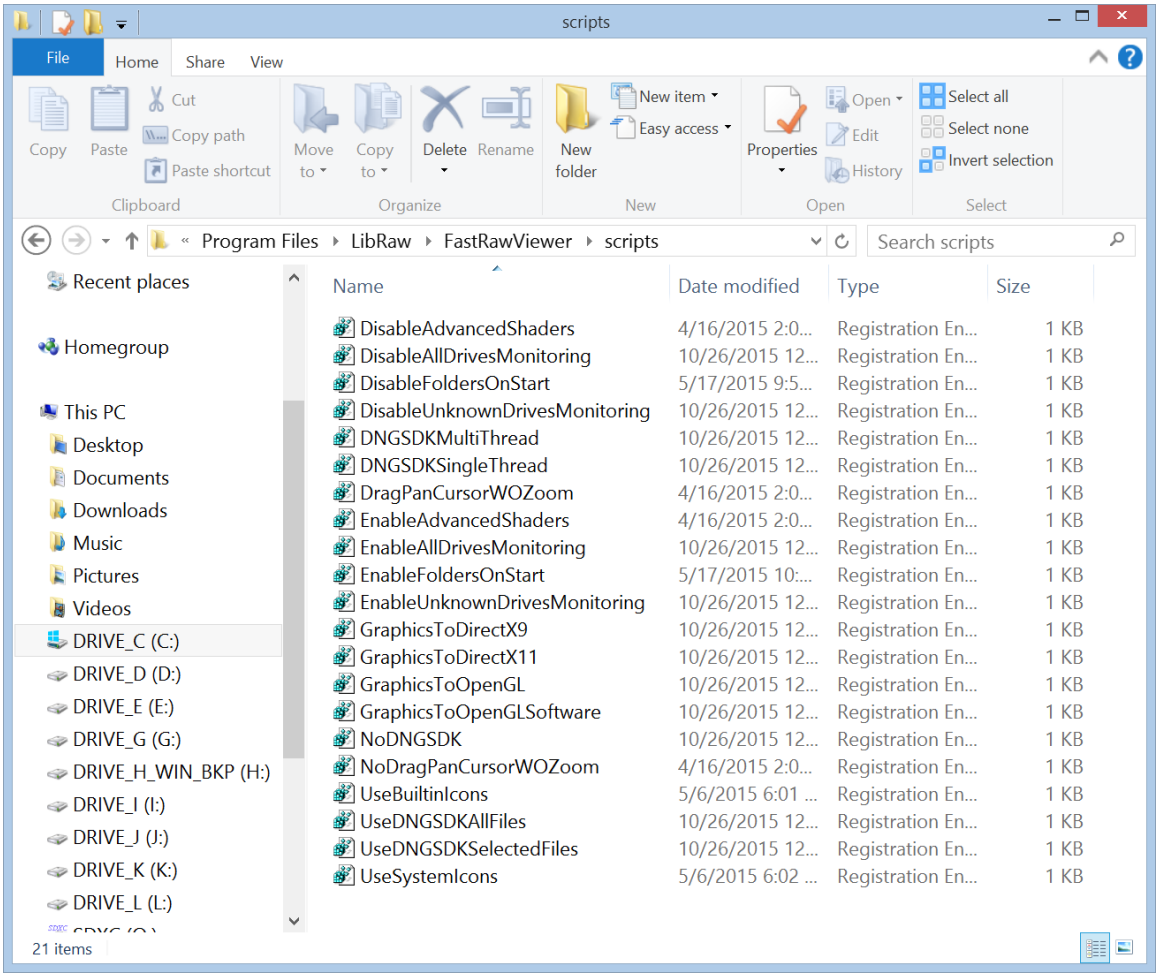
Additional Settings

A few of **FastRawViewer's** settings are accessible only by running scripts that are installed alongside the program. These "hidden" settings are needed extremely rarely, and should be applied, as a rule, only once.

These scripts should only be used while the program is not running; otherwise **FastRawViewer** will overwrite the configurations with the old values during the program exit.

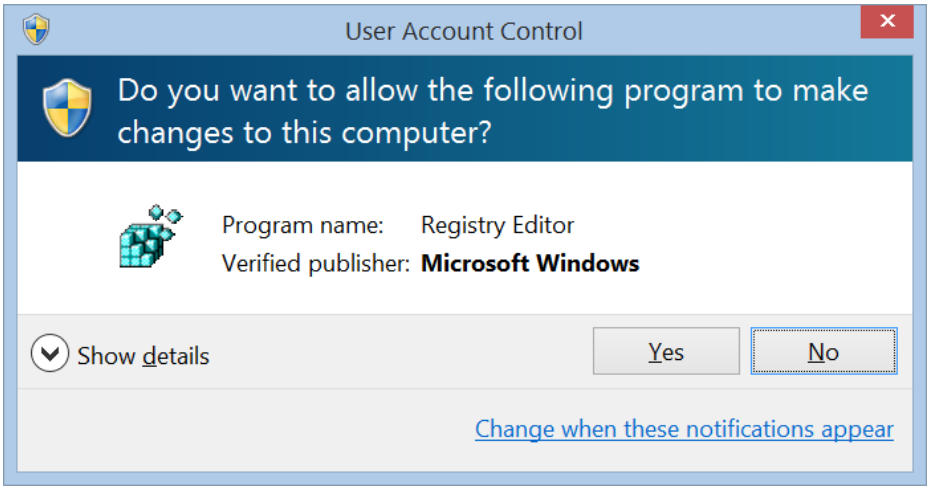
Using Additional Settings Scripts: Windows

Scripts installed with the program are copied into the folder
C:\Program Files\LibRaw\FastRawViewer\Scripts:

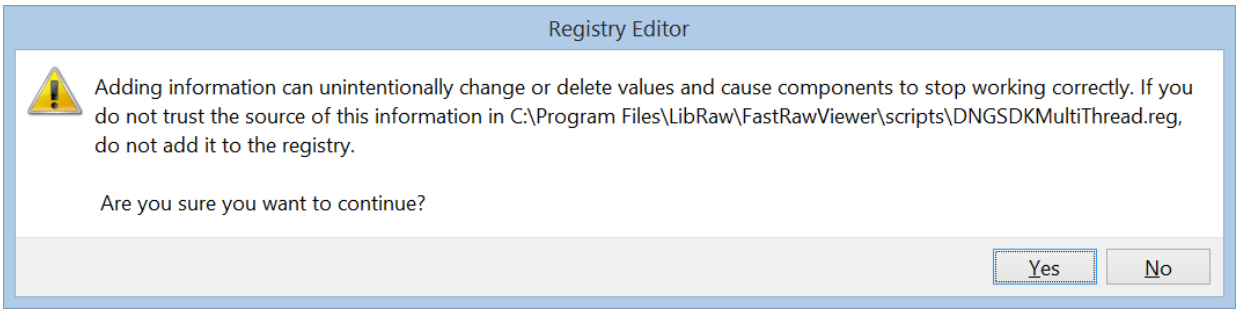


To use scripts, one needs to open the shown above folder with any file *manager (Windows Explorer, for example)*, choose the necessary script, and run it *(double click or Enter).*

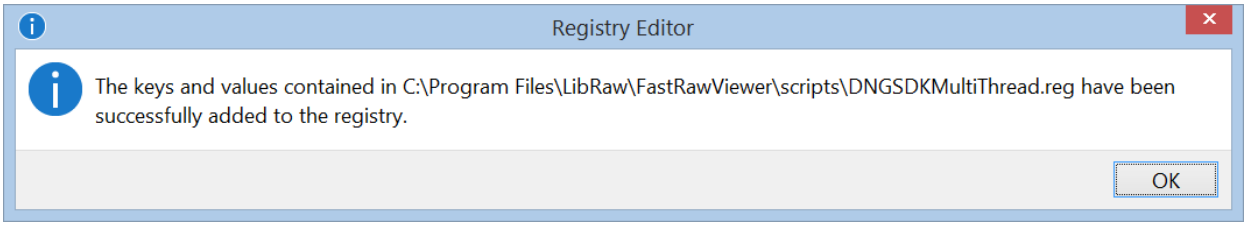
Registry Editor will run, which will first display a Windows UAC message:



Press **Yes** to agree to the warning, after which Register Editor will warn you again:



Once again confirm by pressing **Yes**, and Registry Editor will inform you of your success:

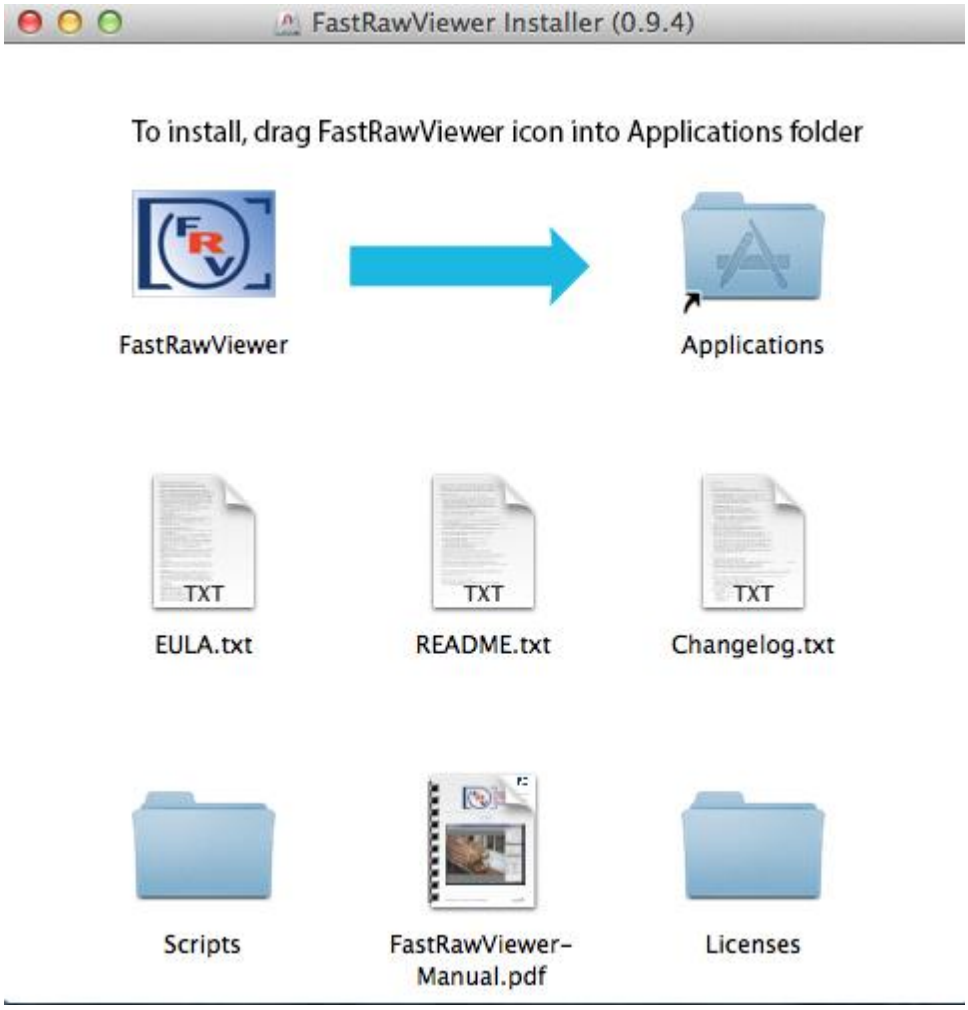


Using Additional Settings Scripts: Mac OS X

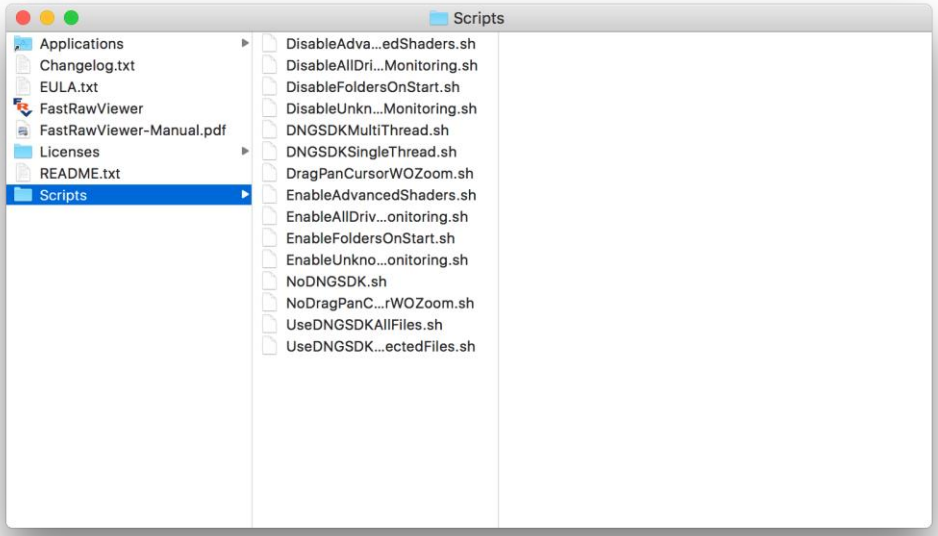
The Mac version of **FastRawViewer** contains additional settings scripts in the Scripts folder in the installation icon *(FastRawViewer-1.2.N.MMM.dmg)*.

To use the scripts:

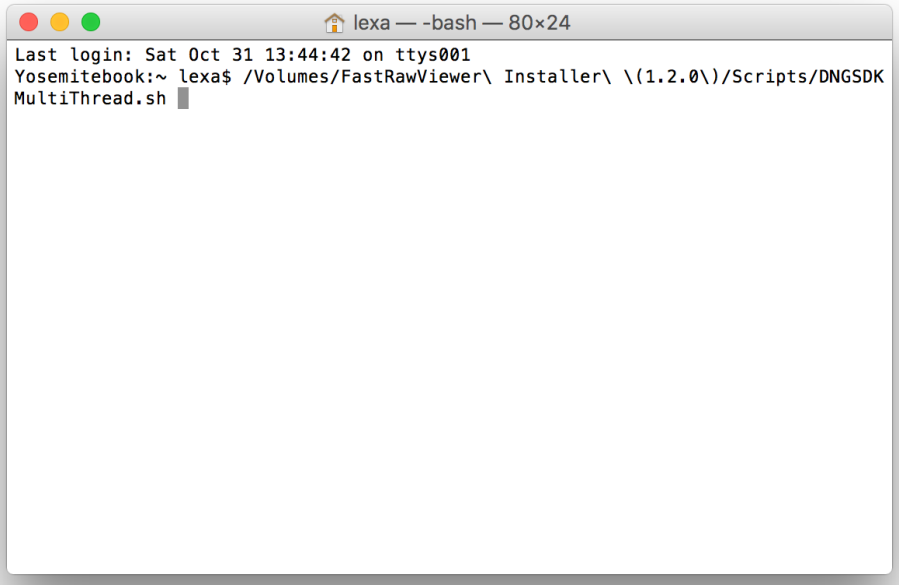
1. Mount the disk image *(double-click on the regular **FastRawViewer** installation dmg you've downloaded from our site):*



2. Go to the **Scripts** folder:



3. Open the **Terminal** program
   Applications – Utilities – Terminal.
4. Drag the needed script onto the **Terminal** window, and you will see the full path to the script you are about to execute.



5. Switch to the **Terminal** window and press **Enter**. The script will be executed without any output to the Terminal window; if there's some sort of message, it means that there was an error.

Additional Settings Description

Name of script file	Description
Advanced Troubleshooting	
Windows: choosing the program graphics acceleration method	
GraphicsToDirectX9 **GraphicsToOpenGL** **GraphicsToDirectX11**	Sets the graphics "engine" DirectX9, OpenGL, or DirectX11
Turning resource-intensive graphics operations on and off	
EnableAdvancedShaders **DisableAdvancedShaders**	Turns on *(default)*/off resource-intensive graphics operations: • Bicubic interpolation • Simultaneous use of focus peaking in the Edge and Fine detail modes • Artifact reduction filtration. These scripts are for both Mac and Windows, however for all modern Macs, it is not necessary to turn off resource-intensive operations – the efficiency of the graphics adapters is good enough to use those. Switching them off may be necessary for Windows platforms using low-end graphics *(chipset Intel graphics, the oldest and weakest graphics processing cores).*
Controlling the Folders panel	
EnableFoldersOnStart **DisableFoldersOnStart**	**Enable** *(default value)* turns on the default behavior of the Folders panel: • When starting FastRawViewer passing the file name as an argument *(including through the Start without filename setting)* the last state of the Folders panel *(opened/closed, floating/docked)* is applied. • When starting without a filename as a parameter, the Folders panel always opens.

Name of script file	Description
	Disable: FastRawViewer starts with a closed Folders panel. It can be opened through Menu – Panels – Folders. This setting is intended, first of all, as a test in extraordinary situations – in a few rare cases, the monitoring of the removable media status and/or the use of the folder/disc system icons leads to **FastRawViewer** not being able to work.
DisableFoldersRefresh **EnableFoldersRefresh**	Enables/disables automatic folder tree refresh in Folders panel. Use if you have problems with automatic folders refresh (program crashes after copy/move to newly created destination).
SimpleFoldersHandling **NormalFoldersHandling**	Simplified/normal folder tree handling. In simplified mode some features are disabled (automated folder tree refresh, removable media monitoring, etc).
UseBuiltinIcons **UseSystemIcons**	Allows one to switch the Interface – Use built-In file/folder icons setting without launching **FastRawViewer**. This is intended for the case when the additional icon provider that is built into the system isn't working *(this has been known to happen, for example, with some versions of Dell Backup)* and **FastRawViewer** cannot be launched to change these settings because the program crashes during the communication with the icon provider.
Advanced Tune	
Using Adobe DNG SDK	
UseDNGSDKAllFiles **UseDNGSDKSelectedFiles** **NoDNGSDK**	Use DNG SDK for • All files • Linear DNG/Floating point DNG *(default)* • Do not use

Name of script file	Description
DNGSDKSingleThread **DNGSDKMultiThread**	Use/do not use DNG SDK in multi-thread mode. Multi-thread mode gives greater efficiency, but may take up over the processor, getting in the way of other computer programs running at the same time.
DngUseColorMatrix **DngUseForwardMatrix**	Type of embedded color data used to display DNG files: ColorMatrix or ForwardMatrix
Controlling the Filmstrip/Thumbnails panels behavior	
EnableUnknownDrivesMonitoring **DisableUnknownDrivesMonitoring** **EnableAllDrivesMonitoring** **DisableAllDrivesMonitoring**	Turns on/off the monitoring of any changes in the current folder on: • Media (discs), whose type cannot be recognized by **FastRawVewer** *(for example, RamDrive)* • Media, which are recognized by **FastRawViewer** *(CDROM, Floppy disks)*, but for which there are no separate settings in the Preferences *(it is there only for Removable Media and for network volumes).*
FilmstripCenterOnFolderUpdate **NoFilmstripCenterOnFolderUpdate**	Turns on *(default)*/off the centering of the highlighted Filmstrip element when changing the contents of the current folder.
FilmstripDefaultContrast	Sets the default contrast for the highlighted element in the Filmstrip panel. If one wants to increase/decrease the contrast – copy the script, and edit it *(change the default value by 5 more or 5 less)* and run it.
WheelScrollDefault	Sets the default mouse wheel scroll step for all scrolling lists (folders, thumbnails in Filmstrip and Grid View, EXIF table). If one wants to increase/decrease the contrast – copy the script, and edit it *(change the default value to wheel step needed)* and run it.
FilmstripDefaultOpenDelay	File selected by Filmstrip panel navigation is not opened immediately. This delay allows arrow keys Filmstrip navigation without CPU/disk overload *(not every intermediate file will be opened)*.

Name of script file	Description
	Default delay is 30 milliseconds. If one wants to increase/decrease this delay – copy the script and edit it.
FileArrivalDefaultDelay **NoFileArrivalDelay**	Designed to prevent **FastRawViewer** from attempting to display files that are not yet fully copied into the current folder. **FastRawViewer** • waits for the file size on the disk to stop changing *(to determine that the size stopped changing the folder is re-read with the frequency set in Preferences - Performance - Re-read folder in...)* • additionally, delays the display of this new file for the amount of time set in FileArrivalDelay *(default setting - 2 seconds)* • displays this file in Filmstrip panel Scripts that control the delay: • **FileArrivalDefaultDelay** - sets the default delay *(2000 milliseconds)*; if you want a different value for the default delay please edit the script • **NoFileArrivalDelay** - sets the delay to zero, thus disabling any extra delay and file size change analysis.
File Processing	
TryJPEGasRAW **NoJPEGasRAW**	Attempts to decode files with a JPEG extension the same as for RAW files. This setting is useful for cameras with modified Firmware *(the DiagRAW hack and old versions of the CHDK hack)* because these cameras save RAW files with JPG extensions.
Alternate keyboard shortcuts handling	
AlternateKeyHandler **NoAlternateKeyHandler**	Alternate keyboard handler *(Windows only)* – turns on the alternative keyboard shortcuts processing mode. Turn on only if there are problems with the processing of keyboard shortcuts *(this happens when using utterly non-standard keyboard layouts, for instance when switching between Qwerty u Dvorak)*.

Name of script file	Description
GlobalAlternateKeyHandler **NoGlobalAlternateKeyHandler**	For alternate shortcuts handler *(see above)*: turns on global shortcut capture in all panels *(by default – only in main window area)*.
Performance	
SetProcessingMaxParallel	By default, **FastRawViewer** uses all of the available processing cores to process RAW data. Setting the Prefs.ProcessingMaxParallel parameter to a smaller value *(taking HyperThreading into account)* may increase the performance if there are many cores while the RAW files are relatively small.
UseAVX2 **NoAVX2**	Turns on/off the use of AVX2 instructions where for those computers where this instruction set is supported. By default, this is turned on.
Other settings	
DragPanCursorWOZoom **NoDragPanCursorWOZoom**	Turns on *(default)/*off the display of the Drag and Pan cursors in the case when the image fits completely in the Window and there is nowhere to Drag/Pan.

Backing up the Settings

Windows: to back up the settings, please use the **BackupSettings.cmd** script, which is installed in the same **C:\Program Files\LibRaw\FastRawViewer\scripts** folder as the scripts described above.

As a result of running this script, an **FRV-backup** folder will be created in your **Documents** folder. This **FRV-backup** folder will contain three files containing a copy of your program's settings:

- **Preferences.reg** – for the settings which are controlled through the Preferences
- **Shortcuts.reg** – the settings for the keyboard shortcuts
- **LastUsedSettings.reg** – this contains the automatically-saved settings such as a list of Recent Files/Recent Folders, window position, etc.

To restore settings from the backup copy:

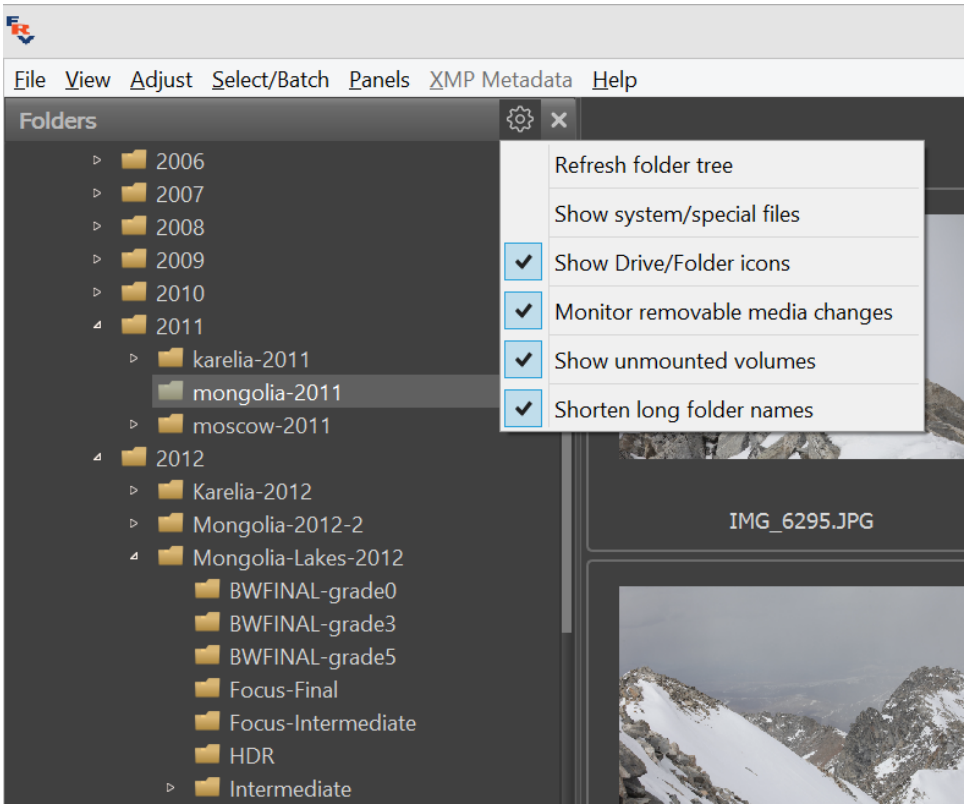
1. Quite **FastRawViewer**
2. Double-click the file with the backup copy of the settings you want to restore – this will import them into the Windows Registry.

Mac OS X: the settings are stored in **~Library/Preferences/com.libraw-llc.FastRawViewer.plist**
All of the standard backup procedures for Macintosh *(TimeMachine, etc.)* will save and restore those settings without any trouble.

Informational Panel Settings

The settings icon (⚙) is located in the header of the informational panels, allowing one to perform actions or change preferences for the current panel. These setting can be changed at any moment while the program is running and are effective immediately.

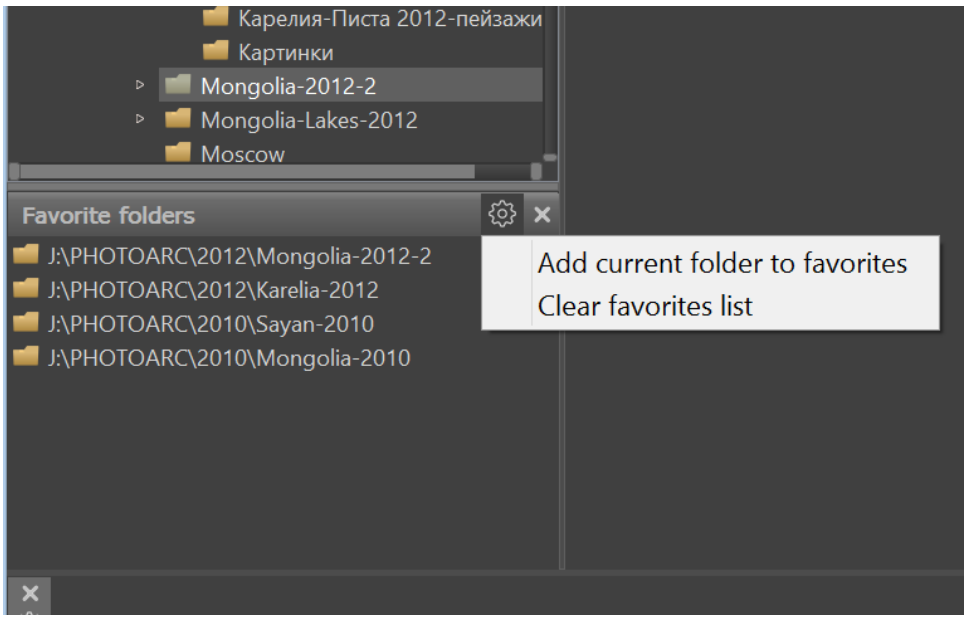
Folders Panel



- **Refresh folder tree** – re-reads the folder tree. This action is intended to sync the displayed file structure with the current one on the disk; useful if the monitoring of the creation of new files/folders *(default setting for network collections and memory cards)* is turned off.
- **Show system/special files**: turns on the display of files/folders which are usually hidden:
  - Mac: bundles *(applications and disk images)*; folders, the names of which start with a dot; standard Unix folders like /usr, /bin etc.
  - Windows: C:\Windows folder.
  - All systems: Lightroom folders.
- **Show Drive/Folder icons** – allows drive and folder icon display.
- **Monitor removable media changes** – allows automatic discovery and monitoring of removable media.
- **Show unmoumted volumes (Windows only)** – allows drive letter display when the media is offline.

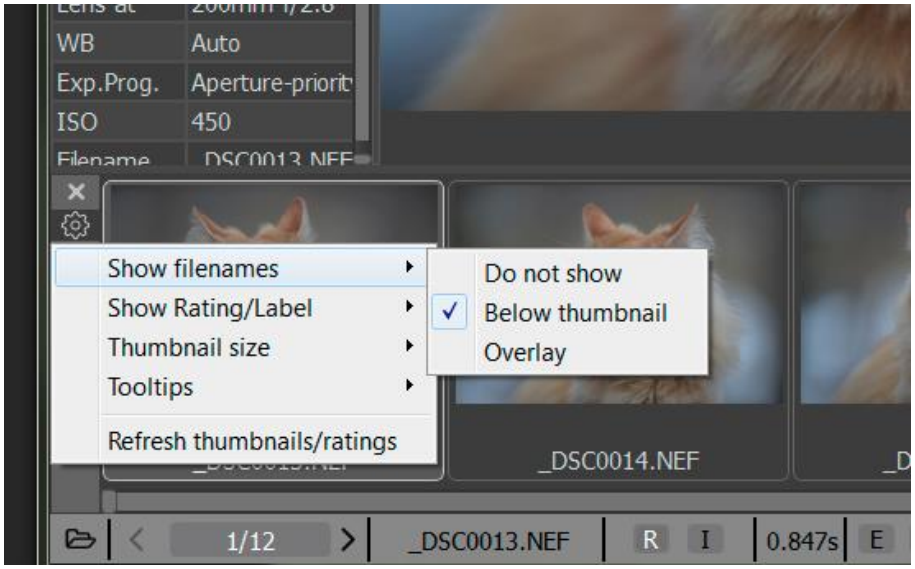
- **Shorten long folder names**: for folders with names longer than 8 characters, the displayed name for the folder will be automatically shortened to fit in the window.
  This is done by removing the middle of the folder name from the display. Any folder names shorter than 9 symbols aren't affected.

Favorite Folders Panel

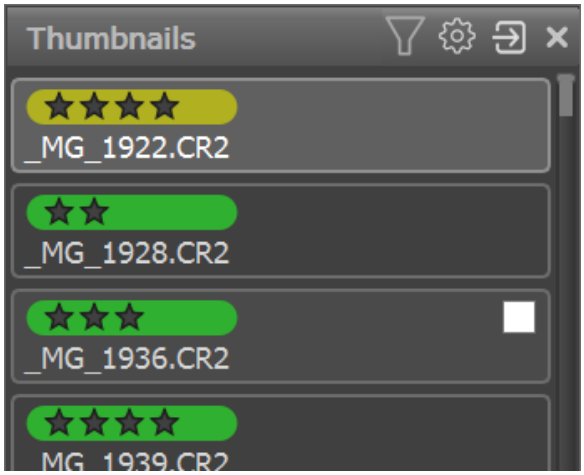


- **Add current folder to favorites** – adds the current folder to the list of favorites
- **Clear favorites list** – clears the list of favorite folders.

Filmstrip/Thumbnails Panel



- **Show filenames** – sets a mode for file name display in the Filmstrip: don't show, show under the icon, or show over the icon.
- **Show Rating/Label** – sets a mode for XMP Rating/Label display in the Filmstrip: don't show, show under the icon, or show over the icon.
- **Thumbnail size**: setting the size of the Thumbnail preview :
    - 11 sizes, starting with 75 and up to 600 pixels on the longer side.
    - **More space for vertical images** – allows on to set the icon aspect ration 1:1 instead of 2:3
    - **Display Thumbnails** – allows one to turn off preview display, allowing only file names, and, if desired, XMP ratings/labels.
      This mode is efficient when using a vertically-oriented Filmstrip:

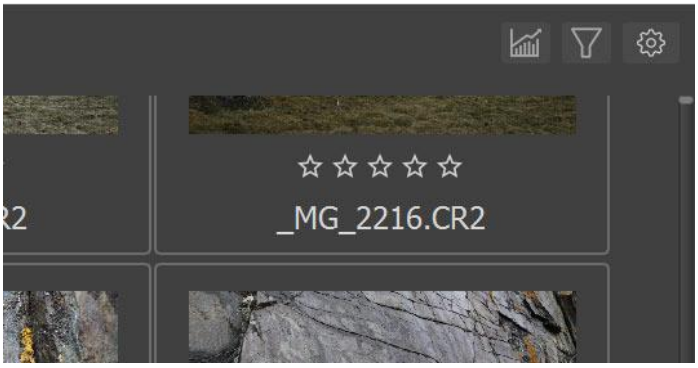


    - To adjust the font size in this mode, first set the thumbnail size and only after that switch the previews off.
- **Tooltips** – what to display in the floating hints: **Title**, **Description**.
- **Refresh thumbnails/ratings**: action for re-reading the file icons in the current folder.

Grid View Panel

In the upper-right view of the Grid View Panel are the following three icons

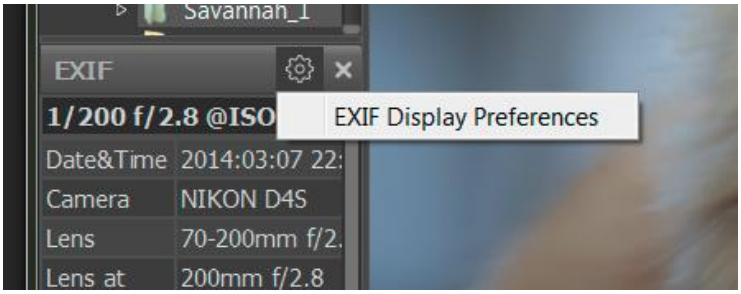
- – Controls the display of EXIF data, the histogram, and the statistics in Grid mode.
- – Filters files by ratings and labels
- – Settings



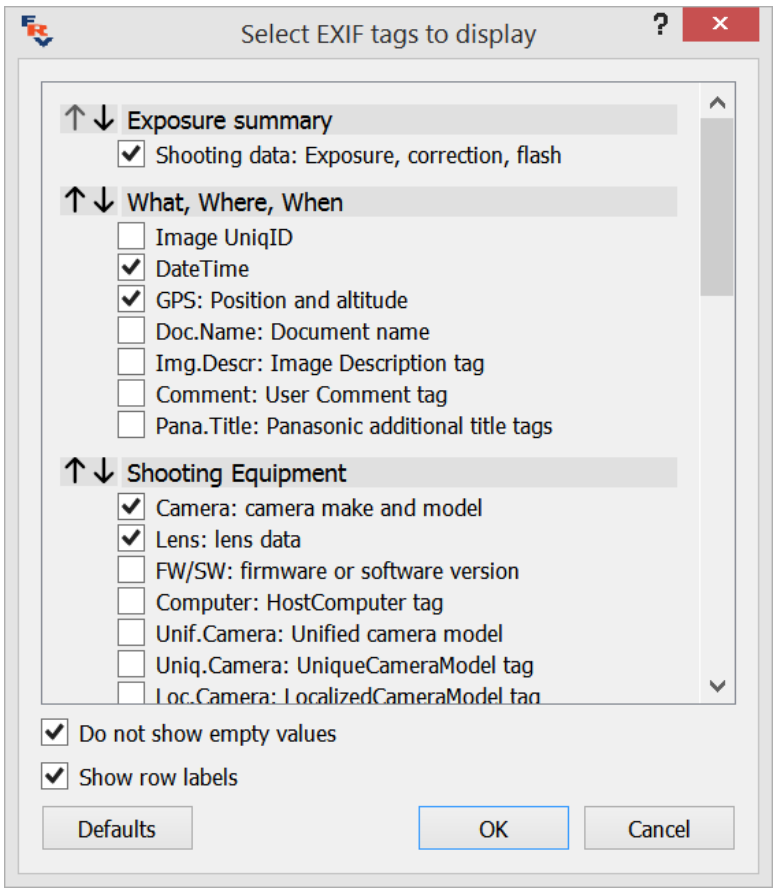
These settings are very much like those for the **Thumbnail** panel, with the following exceptions:

- The list of sizes is different: from 125 to 800 pixels on the longest side.
- There is no setting to switch off the display of Thumbnails.

EXIF Panel



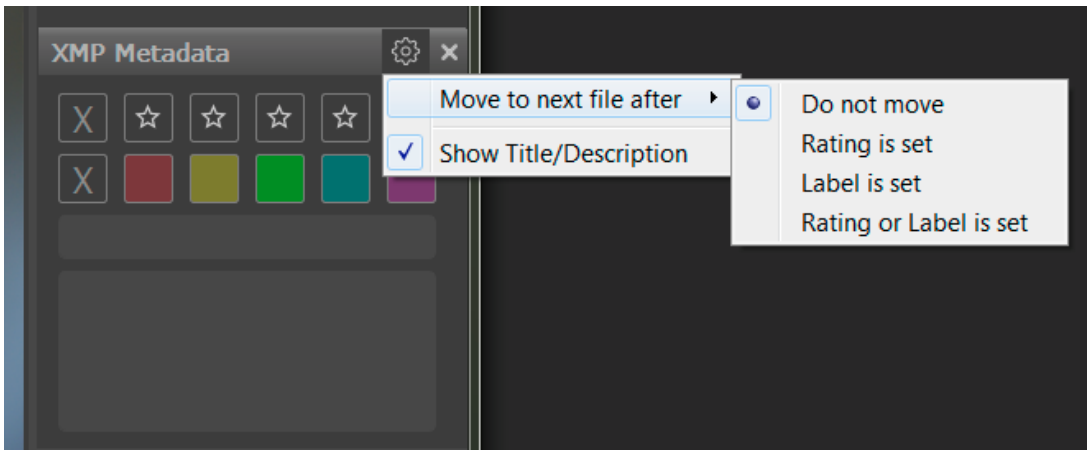
EXIF Display preferences runs a dialog for editing EXIF display:



In this dialog:

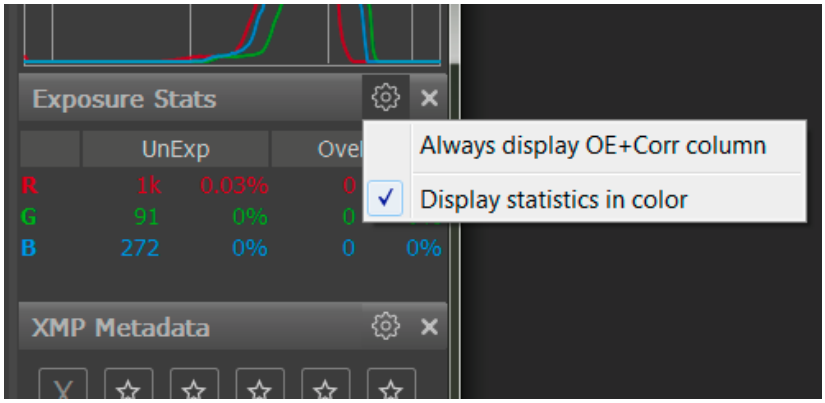
- The **up/down arrows** allow one to move the groups of the displayed information.
- In each group, one can choose the elements that are necessary during display.
- **Do not show empty values** – forbids the output of empty lines *(for which the displayed RAW has no data)*.
- **Show row labels** – turns the left column of the EXIF-table *(field names)* on/off.

XMP Metadata Panel



- **Move to next file after** – sets the automatic progression to the next file after setting a rating or mark:
  - **Do not move** – doesn't move.
  - **Rating is set** – moves when a rating is set.
  - **Label is set** – moves when a mark is set.
  - **Rating or label** – moves when setting either parameter.
- **Show Title/Description** – Shows the title and description in the XMP panel.

Exposure Statistics Panel



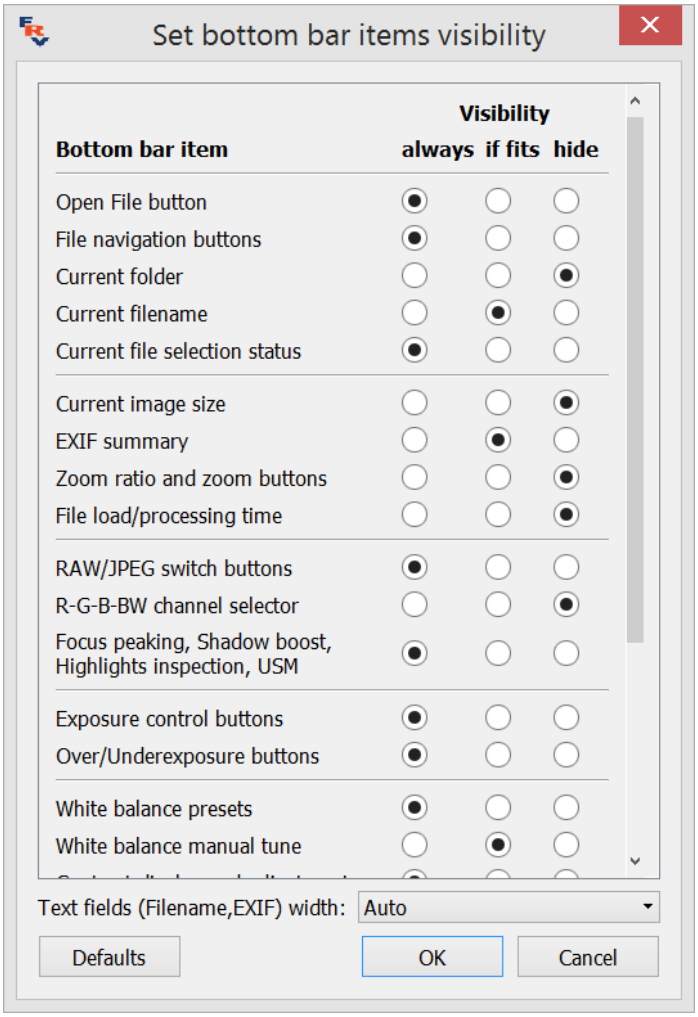
- **Always display OE+Corr column**: turns on the display of the third column of statistics *(OE+Corr)*, even if it has the same values as the OveExp column.
- **Display statistics in color**: turns on the output of table rows in the color corresponding to the color of the pixels.

Customizing the Status Bar

Many control and information display elements characterizing the displayed image can be placed in the status bar. As a rule, all possible elements are not needed to the user *(and they won't all fit on a monitor of average resolution)*, so the display of these elements can be customized.

For customization choose **File – Customize bottom bar** in the menu**,** or choose Customize Bottom Bar in the menu that pops up when pressing the settings button in the lower right corner of the program window *(if you have not switched off the display of this icon)*.

This settings window pops up:



Each line on the table corresponds to one element of the program's status bar, and can be set to one of three positions:

- **Visibility always**: always shows the element. If the program window size is too small, then the elements will overlap.
- **If fits**: The element is shown only if the size of the window is such that the elements do not get in each other's way.
- **Hide**: The element is not shown.

The following elements can be customized:

- File Navigation:
  - **Open File Button**: Open file icon
  - **File navigation buttons**: Prev File/Next file button and current file number indication *(this button opens up the set file by number dialog)*.
  - **Current folder**: current folder being browsed.

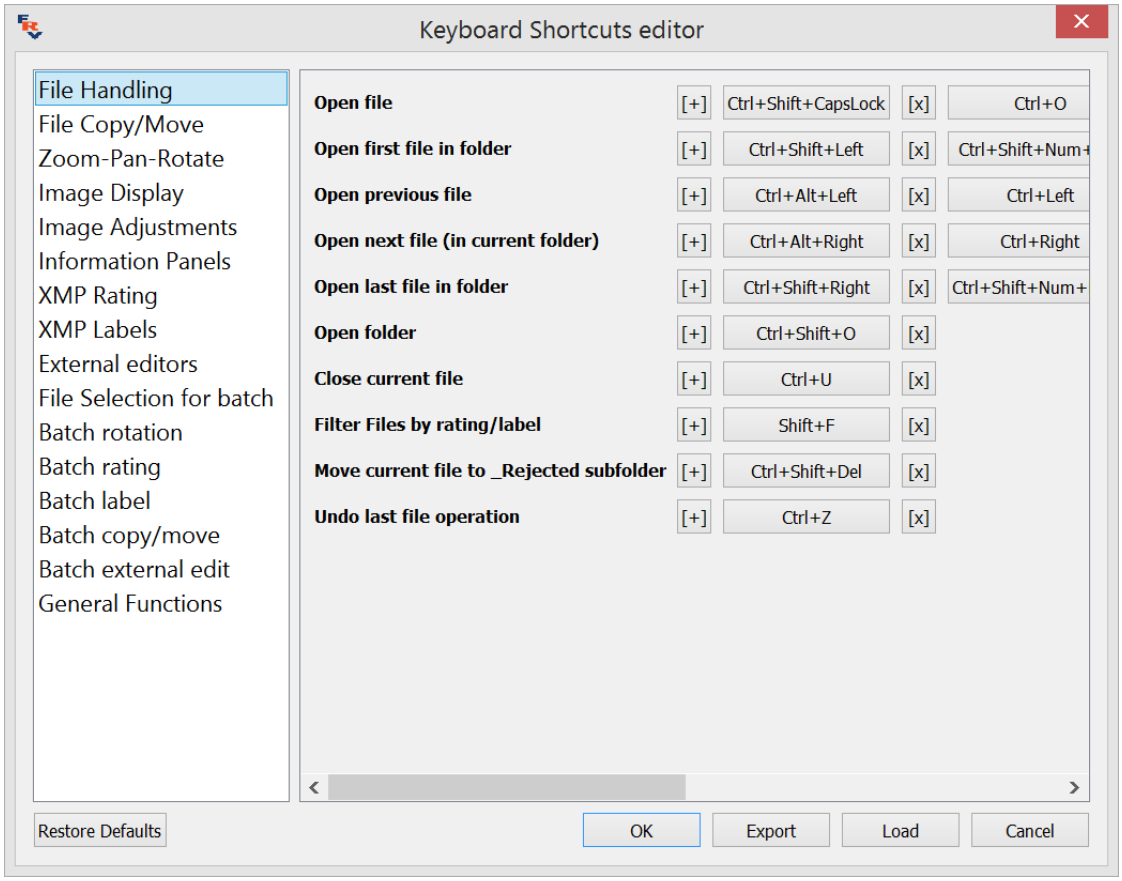
- **Current filename**: File name *(without the name of the folder).*
- **Current file selection status:** *Sel* (in red) If current file is selected via Select/Batch, empty field otherwise.

- File and Display information:
  - **Current image size**: size of the image in pixels
  - **EXIF summary**: shooting data *(exposure, flash, lens's focal length)*.
  - **Zoom ratio and zoom buttons**: current file zoom *(clicking causes Fit to Window)* Zoom In/Zoom Out buttons.
  - **File load/processing time**: time spent on reading-decoding-processing the file in **FastRawViewer.**
- Controlling the current file display:
  - **RAW/JPEG switch buttons**: Buttons for switching between RAW/JPEG
  - **R-G-B-BW channel selector**: Buttons for switching RGB channels and black and white representation.
  - **Focus peaking and shadow boost**: Buttons for turning those modes on
- Exposure analysis, exposure compensation control:
  - **Exposure control buttons**: current exposure compensation value *(clicking on this turns on/off exposure compensation)*.
  - **Over/Underexposure buttons**: Buttons for turning on/off the display of over/underexposed areas.
- White balance and contrast control:
  - **White balance presets**: choose preset WB.
  - **White balance manual tune**: current white balance indication; pressing on it summons a dialog for adjusting white balance manually.
  - **Contrast curve selector**: drop-down list of contrast curve choices.
- **Rotation control buttons:** control of the image rotation, current orientation display
- Controlling XMP ratings and labels:
  - **XMP Rating buttons**: indication and control of XMP ratings.
  - **XMP Label indicator**: indication of current XMP labels.
  - **XMP Label buttons**: indication and control of XMP labels.
  - **Fullscreen, hide/show filmstrip/dock, and customize buttons:** Fullscreen, hide/show filmstrip panel/all panels, and program settings block buttons.
- **Text fields width – this setting controls the width of the text field, such as file name, EXIF summary, etc.:**
  - **Auto** – the width varies according to predetermined, built-in boundaries
  - **Minimum allowed** – always the minimum width;
  - **Maximum allowed** – always maximum width.

Setting the Keyboard Shortcuts

FastRawViewer allows you to re-define all keyboard shortcuts, assigning an arbitrary amount of alternative keystroke and mouse button combinations to each of the actions possible in **FastRawViewer**.

To define or modify the sequences for the actions use the editor under **Menu – File – Keyboard Shortcuts** (**Ctrl-K**):

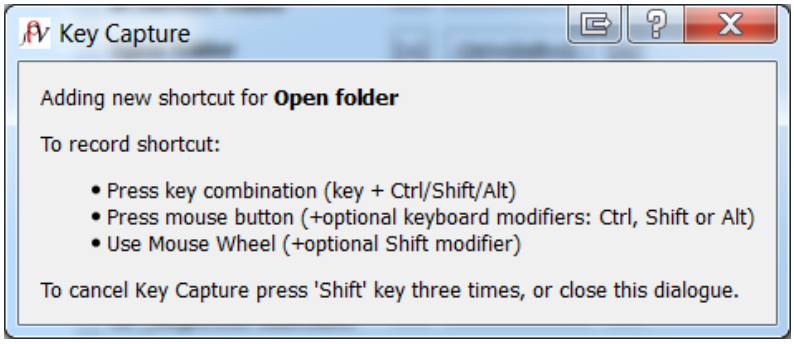


The left pane contains the list of groups of actions. The right pane displays the names of the actions in the highlighted group and current shortcuts for those actions.

Looking to the right of every action name:

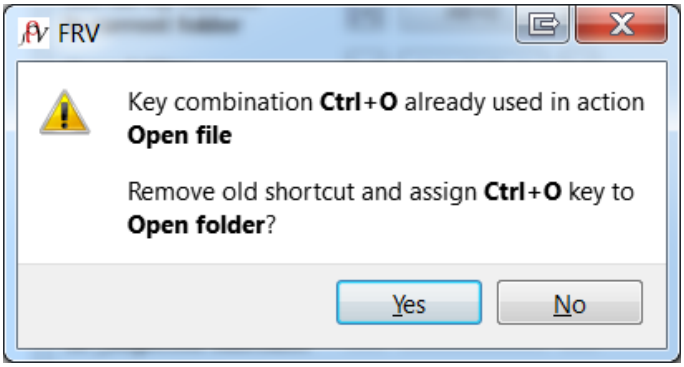
- **[+]** – adds a new keyboard shortcut for the action
- **[keyboard combination]** – currently assigned shortcut
- **[x]** *(to the right of every keyboard combination)* – deletes this combination.

When pressing the buttons to add or edit the combination the following dialogue appears:

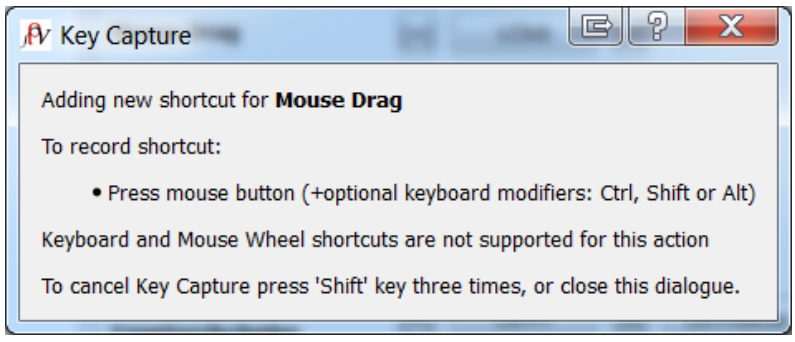


Hit the combination of keys *(and mouse buttons)*, which you want to assign to the action, and it will be memorized. To close the window without modifying the current status *(that is, to cancel the assignment)*, press the Shift key three times.

It is possible that the selected combination is already in use somewhere, and then the program will prompt with the following:



For some actions, only a specific mouse button can be assigned *(this applies to the actions, which are done with the mouse: setting the white balance for the "click-on-gray" method, etc.)*. In this case, the dialogue to assign the combination changes a bit:



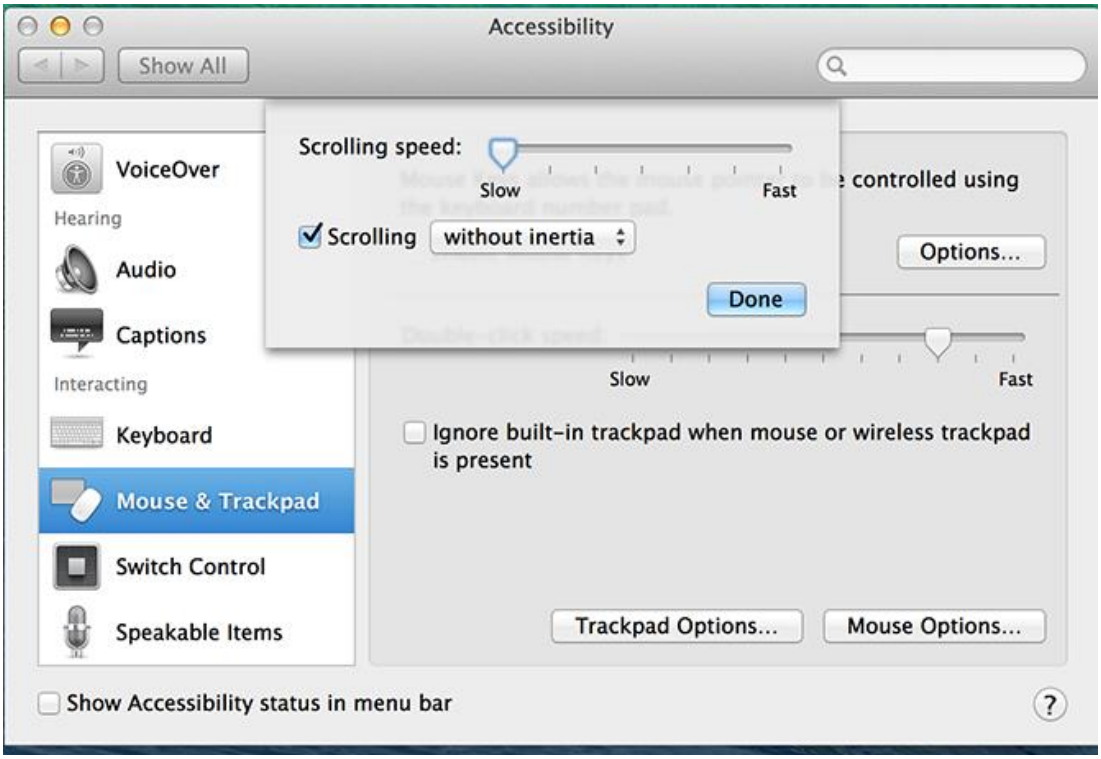
To transfer shortcut settings to another computer use **Export** button on source and **Load** on destination.

Settings for Apple Magic Mouse/Trackpad

The standard settings for Apple Magic Mouse in OS X 10.9 и 10.10 are designed for smooth scrolling *(Natural Scroll).* With these settings trackpad and Magic Mouse continue to send scrolling events for some time even after the user stopped moving his finger.

The settings are very suitable for panning; but cause erratic behavior if we want to associate some action to the trackpad or mouse. For example, if we associate “go to next/previous image” to the Magic Mouse with default natural scroll settings several files will be skipped.

To disable Natural Scroll, please visit **Accessibility - Mouse & Trackpad** and there select **Scrolling without inertia** and slow scrolling speed:



Standard FastRawViewer Keyboard Shortcuts

Action	Key Sequence Windows	Key Sequence Mac OS X
File Handling		
Open file	Ctrl+O	⌘O
Open first file in folder	Ctrl+Shift+Left Ctrl+Shift+Num+Left	⇧⌘← ⇧⌘+Num←
Open previous file	Ctrl+Left Backspace Ctrl+Num+Left Left Num+Left	⌘← ⌫ ⌘+Num← ←Num ←
Open next file (in current folder)	Ctrl+Right Space Ctrl+Num+Right Right Num+Right	⌘→ Space ⌘+Num→ → Num→
Open last file in folder	Ctrl+Shift+Right Ctrl+Shift+Num+Right	⇧⌘→ ⇧⌘+Num→
Open folder	Ctrl+Shift+O	⇧⌘O
Close current file	Ctrl+U	⌘U
Filter Files by rating/label	Shift+F	⇧F
Move current file to _Rejected subfolder	Ctrl+Shift+Del	⇧⌘⌫
Undo last file operation	Ctrl+Z	⌘Z
File Copy/Move		
Move file to folder (ask destination)	M	M
Move file to last used folder	Shift+M	⇧M
Move file to 2nd used folder	Alt+Shift+M	⌥⇧M
Move file to 3rd used folder	Ctrl+Shift+M	⇧⌘M
Move file to 4th used folder	Ctrl+Alt+M	⌥⌘M
Move file to 5th used folder	Ctrl+Alt+Shift+M	⌥⇧⌘M

Copy file to folder (ask destination)	C	C
Copy file to last used folder	Shift+C	⇧C
Copy file to 2nd used folder	Alt+Shift+C	⌥⇧C
Copy file to 3rd used folder	Ctrl+Shift+C	⇧⌘C
Copy file to 4th used folder	Ctrl+Alt+C	⌥⌘C
Copy file to 5th used folder	Ctrl+Alt+Shift+C	⌥⇧⌘C
Zoom-Pan-Rotate		
Toggle view: Image/Grid	G	G
Toggle show EXIF/Histogram/Statistics in grid view	Shift+G	⇧G
Zoom In	Ctrl++ Ctrl+= Shift+Wheel Up	⌘+ ⌘=
Zoom Out	Ctrl+- Shift+Wheel Down	⌘-
Mouse Panning	Right Click	Right Click
Quick Zoom and Pan	Shift+Right Click	⇧Right Click
Mouse Drag	Left Click	Left Click
Quick Zoom and Drag	Shift+Left Click	⇧Left Click
Actual Pixels (1:1)	Ctrl+1	⌘1
Fit to Window	Ctrl+0	⌘0
Toggle Zoom	Z	Z
Toggle Fullscreen mode	F	F
Return from fullscreen or single image mode	Esc	⎋
Rotate 90^0 Counterclockwise	Ctrl+7 Ctrl+Home	⌘7 ⌘↖
Rotate 90^0 Clockwise	Ctrl+9 Ctrl+PgUp	⌘9 ⌘⇞
Image Display		
Display full color RGB	Ctrl+2	⌘2

Display R channel	Ctrl+3	⌘3
Display G channel	Ctrl+4	⌘4
Display B channel	Ctrl+5	⌘5
Display BW conversion	Ctrl+6	⌘6
Switch data to display (RAW, embedded JPEG, ext. JPEG	J	J
Toggle Focus Peaking (None/Edges/Fine Details/Both)	P	P
Focus Peaking: contrast edges	*no shortcuts set*	*no shortcuts set*
Focus Peaking: fine details	*no shortcuts set*	*no shortcuts set*
Screen Sharpening On/Off	S	S
Image Adjustments		
Shadows boost On/Off	Shift+S	⇧S
Highlights inspection On/Off	Shift+H	⇧H
Show/Hide Overexposed areas	O	O
Show/Hide Underexposed areas	U	U
Toggle White Balance (Daylight/As Shot/Auto)	W	W
Manual White Balance	Alt+W	⌥W
Custom WB	Alt+Left Click	⌥Left Click
Increase image contrast	K	K
Decrease image contrast	Shift+K	⇧K
Exposure correction Off/On	A	A
Increase Exposure	Alt++Alt+=	⌥+⌥=
Decrease Exposure	Alt+-	⌥-
Auto Exposure correction	Shift+A	⇧A
Information Panels		
Show/Hide Histogram	F2	F2
Show/Hide EXIF	F3	F3

Show/Hide OE/UE Stats	F4	F4
Show/Hide XMP Metadata panel	F5	F5
Show/Hide Filmstrip panel	F6	F6
Show/Hide Folders panel	F7	F7
Show/Hide Favorite Folders sub panel	Shift+F7	⇧F7
Hide all panels	Tab	⇥
Reset panels positions	Alt+F10	⌥F10
XMP Rating		
No Rating	Alt+0	⌥0
Set Rating to Reject	Alt+Del	⌥⌦
Set Rating to 1	Alt+1	⌥1
Set Rating to 2	Alt+2	⌥2
Set Rating to 3	Alt+3	⌥3
Set Rating to 4	Alt+4	⌥4
Set Rating to 5	Alt+5	⌥5
Decrease Rating	Alt+,	⌥,
Increase Rating	Alt+.	⌥.
XMP Labels		
Clear XMP Label	*no shortcuts set*	*no shortcuts set*
Red	Alt+6	⌥6
Yellow	Alt+7	⌥7
Green	Alt+8	⌥8
Blue	Alt+9	⌥9
Purple	*no shortcuts set*	*no shortcuts set*
Edit Title/Description	Alt+D	⌥D
External editors		
Show in Windows Explorer	Ctrl+F	⌘F
Run External Program 1	R	R

Run External Program 2	Alt+R	⌥R
Run External Program 3	Ctrl+R	⌘R
Run External Program 4	*no shortcuts set*	*no shortcuts set*
Run External Program 5	*no shortcuts set*	*no shortcuts set*
Run External Program 6	*no shortcuts set*	*no shortcuts set*
Run External Program 7	*no shortcuts set*	*no shortcuts set*
Run External Program 8	*no shortcuts set*	*no shortcuts set*
Run External Program 9	*no shortcuts set*	*no shortcuts set*
Run External Program10	*no shortcuts set*	*no shortcuts set*
File Selection for batch		
Select/Deselect current file	Ctrl+/	⌘/
Select/Deselect current file and move to next	Ctrl+.	⌘.
Select all files	Ctrl+A	⌘A
Unselect all files	Ctrl+D	⌘D
Invert selection	Ctrl+I	⌘I
Select by Rating/Label	Ctrl+'	⌘'
Save Selection to file	*no shortcuts set*	*no shortcuts set*
Load Selection from file	*no shortcuts set*	*no shortcuts set*
Append Selection from file	*no shortcuts set*	*no shortcuts set*
Batch operations		
Rotate 90^0 Counterclockwise	*no shortcuts set*	*no shortcuts set*
Rotate 90^0 Clockwise	*no shortcuts set*	*no shortcuts set*
Batch rating		
Batch: No Rating	*no shortcuts set*	*no shortcuts set*
Batch: Set Rating to Reject	*no shortcuts set*	*no shortcuts set*
Batch: Set Rating to 1	*no shortcuts set*	*no shortcuts set*
Batch: Set Rating to 2	*no shortcuts set*	*no shortcuts set*
Batch: Set Rating to 3	*no shortcuts set*	*no shortcuts set*

Batch: Set Rating to 4	*no shortcuts set*	*no shortcuts set*
Batch: Set Rating to 5	*no shortcuts set*	*no shortcuts set*
Batch: Decrease Rating	*no shortcuts set*	*no shortcuts set*
Batch: Increase Rating	*no shortcuts set*	*no shortcuts set*
Batch label		
Batch: Clear XMP Label	*no shortcuts set*	*no shortcuts set*
Batch: Red	*no shortcuts set*	*no shortcuts set*
Batch: Yellow	*no shortcuts set*	*no shortcuts set*
Batch: Green	*no shortcuts set*	*no shortcuts set*
Batch: Blue	*no shortcuts set*	*no shortcuts set*
Batch: Purple	*no shortcuts set*	*no shortcuts set*
Batch copy/move		
Batch move file to folder (ask destination)	*no shortcuts set*	*no shortcuts set*
Batch move to last used folder	*no shortcuts set*	*no shortcuts set*
Batch move to 2nd used folder	*no shortcuts set*	*no shortcuts set*
Batch move to 3rd used folder	*no shortcuts set*	*no shortcuts set*
Batch move to 4th used folder	*no shortcuts set*	*no shortcuts set*
Batch move to 5th used folder	*no shortcuts set*	*no shortcuts set*
Batch copy selected file to folder (ask destination)	*no shortcuts set*	*no shortcuts set*
Batch copy to last used folder	*no shortcuts set*	*no shortcuts set*
Batch copy to 2nd used folder	*no shortcuts set*	*no shortcuts set*
Batch copy to 3rd used folder	*no shortcuts set*	*no shortcuts set*
Batch copy to 4th used folder	*no shortcuts set*	*no shortcuts set*
Batch copy to 5th used folder	*no shortcuts set*	*no shortcuts set*
Batch move to _Rejected subfolder	*no shortcuts set*	*no shortcuts set*
Batch external edit		
Run Program #1	*no shortcuts set*	*no shortcuts set*
Run Program #2	*no shortcuts set*	*no shortcuts set*

Run Program #3	*no shortcuts set*	*no shortcuts set*
Run Program #4	*no shortcuts set*	*no shortcuts set*
Run Program #5	*no shortcuts set*	*no shortcuts set*
Run Program #6	*no shortcuts set*	*no shortcuts set*
Run Program #7	*no shortcuts set*	*no shortcuts set*
Run Program #8	*no shortcuts set*	*no shortcuts set*
Run Program #9	*no shortcuts set*	*no shortcuts set*
Run Program #10	*no shortcuts set*	*no shortcuts set*
General Functions		
Edit Preferences	Ctrl+P	⌘,
Edit Keyboard Shortcuts	Ctrl+K	⌘K
Customize bottom bar	*no shortcuts set*	*no shortcuts set*
Exit program	Ctrl+Q	⌘Q

Mac keys Legend

⌘ - Command key

⌥ - Option key, A.K.A Alt key

^ - Control key

⇧ - Shift key

⌫ - Delete key, A.K.A. Backspace key

⇥ - Tab key

⇞ - Page Up key

⇟ - Page Down key

↖ - Home key

↘ - End key

List of Supported Cameras (RAW formats)

- ARRIRAW format
- AVT
  - F-080C
  - F-145C
  - F-201C
  - F-510C
  - F-810C
- Adobe Digital Negative (DNG)
- AgfaPhoto DC-833m
- Alcatel 5035D
- Apple
  - QuickTake 100
  - QuickTake 150
  - QuickTake 200
- Baumer TXG14
- BlackMagic
  - Cinema Camera
  - Micro Cinema Camera
  - Pocket Cinema Camera
  - Production Camera 4k
  - URSA
  - URSA Mini
- Canon
  - PowerShot A5
  - PowerShot A5 Zoom
  - PowerShot A50
  - PowerShot A460 (CHDK hack)
  - PowerShot A470 (CHDK hack)
  - PowerShot A530 (CHDK hack)
  - PowerShot A550 (CHDK hack)
  - PowerShot A570 (CHDK hack)
  - PowerShot A590 (CHDK hack)
  - PowerShot A610 (CHDK hack)
  - PowerShot A620 (CHDK hack)
  - PowerShot A630 (CHDK hack)
  - PowerShot A640 (CHDK hack)
  - PowerShot A650 (CHDK hack)
  - PowerShot A710 IS (CHDK hack)
  - PowerShot A720 IS (CHDK hack)
  - PowerShot A3300 IS (CHDK hack)
  - PowerShot Pro70
  - PowerShot Pro90 IS
  - PowerShot Pro1
  - PowerShot G1

- PowerShot G1 X
- PowerShot G1 X Mark II
- PowerShot G2
- PowerShot G3
- PowerShot G3 X
- PowerShot G5
- PowerShot G5 X
- PowerShot G6
- PowerShot G7 (CHDK hack)
- PowerShot G7 X
- PowerShot G9
- PowerShot G9 X
- PowerShot G10
- PowerShot G11
- PowerShot G12
- PowerShot G15
- PowerShot G16
- PowerShot S2 IS (CHDK hack)
- PowerShot S3 IS (CHDK hack)
- PowerShot S5 IS (CHDK hack)
- PowerShot SD300 (CHDK hack)
- PowerShot SD950 (CHDK hack)
- PowerShot S30
- PowerShot S40
- PowerShot S45
- PowerShot S50
- PowerShot S60
- PowerShot S70
- PowerShot S90
- PowerShot S95
- PowerShot S100
- PowerShot S110
- PowerShot S120
- PowerShot SX1 IS
- PowerShot SX50 HS
- PowerShot SX60 HS
- PowerShot SX110 IS (CHDK hack)
- PowerShot SX120 IS (CHDK hack)
- PowerShot SX220 HS (CHDK hack)
- PowerShot SX20 IS (CHDK hack)
- PowerShot SX30 IS (CHDK hack)
- EOS D30
- EOS D60
- EOS 5D
- EOS 5DS
- EOS 5DS R

- EOS 5D Mark II
- EOS 5D Mark III
- EOS 6D
- EOS 7D
- EOS 7D Mark II
- EOS 10D
- EOS 20D
- EOS 20Da
- EOS 30D
- EOS 40D
- EOS 50D
- EOS 60D
- EOS 60Da
- EOS 70D
- EOS 80D
- EOS 300D / Digital Rebel / Kiss Digital
- EOS 350D / Digital Rebel XT / Kiss Digital N
- EOS 400D / Digital Rebel XTi / Kiss Digital X
- EOS 450D / Digital Rebel XSi / Kiss Digital X2
- EOS 500D / Digital Rebel T1i / Kiss Digital X3
- EOS 550D / Digital Rebel T2i / Kiss Digital X4
- EOS 600D / Digital Rebel T3i / Kiss Digital X5
- EOS 650D / Digital Rebel T4i / Kiss Digital X6i
- EOS 700D / Digital Rebel T5i
- EOS 750D / Digital Rebel T6i
- EOS 760D / Digital Rebel T6S
- EOS 100D / Digital Rebel SL1
- EOS 1000D / Digital Rebel XS / Kiss Digital F
- EOS 1100D / Digital Rebel T3 / Kiss Digital X50
- EOS 1200D
- EOS 1300D
- EOS C500
- EOS D2000C
- EOS M
- EOS M2
- EOS M3
- EOS M10
- EOS-1D
- EOS-1DS
- EOS-1D C
- EOS-1D X
- EOS-1D Mark II
- EOS-1D Mark II N
- EOS-1D Mark III
- EOS-1D Mark IV
- EOS-1Ds Mark II

  - EOS-1Ds Mark III
  - EOS-1D X Mark II
- Casio
  - QV-2000UX
  - QV-3000EX
  - QV-3500EX
  - QV-4000
  - QV-5700
  - QV-R41
  - QV-R51
  - QV-R61
  - EX-F1
  - EX-FC300S
  - EX-FC400S
  - EX-FH20
  - EX-FH25
  - EX-FH100
  - EX-S20
  - EX-S100
  - EX-Z4
  - EX-Z50
  - EX-Z500
  - EX-Z55
  - EX-Z60
  - EX-Z75
  - EX-Z750
  - EX-Z8
  - EX-Z850
  - EX-Z1050
  - EX-ZR100
  - EX-Z1080
  - EX-ZR700
  - EX-ZR710
  - EX-ZR750
  - EX-ZR800
  - EX-ZR850
  - EX-ZR1000
  - EX-ZR1100
  - EX-ZR1200
  - EX-ZR1300
  - EX-ZR1500
  - EX-ZR3000
  - EX-100
  - EX-100F
  - EX-10
  - Exlim Pro 505

    - Exlim Pro 600
    - Exlim Pro 700
- Contax N Digital
- Creative PC-CAM 600
- DJI 4384x3288
- DXO One
- Digital Bolex
    - D16
    - D16M
- Epson
    - R-D1
    - R-D1s
    - R-D1x
- Foculus 531C
- FujiFilm
    - E505
    - E900
    - F700
    - F710
    - F800
    - F810
    - S2Pro
    - S3Pro
    - S5Pro
    - S20Pro
    - S1
    - S100FS
    - S5000
    - S5100/S5500
    - S5200/S5600
    - S6000fd
    - S7000
    - S9000/S9500
    - S9100/S9600
    - S200EXR
    - S205EXR
    - SL1000
    - HS10
    - HS11
    - HS20EXR
    - HS22EXR
    - HS30EXR
    - HS33EXR
    - HS35EXR
    - HS50EXR
    - F505EXR

  - F550EXR
  - F600EXR
  - F605EXR
  - F770EXR
  - F775EXR
  - F800EXR
  - F900EXR
  - X-Pro1
  - X-Pro2
  - X-S1
  - XQ1
  - XQ2
  - X100
  - X100S
  - X100T
  - X10
  - X20
  - X30
  - X70
  - X-A1
  - X-A2
  - X-E1
  - X-E2
  - X-E2S
  - X-M1
  - XF1
  - X-T1
  - X-T1 Graphite Silver
  - X-T10
  - IS-1
- HTC
  - UltraPixel
  - One (A9)
  - One (M9)
- Hasselblad
  - H5D-60
  - H5D-50
  - H5D-50c
  - H5D-40
  - H4D-60
  - H4D-50
  - H4D-40
  - H4D-31
  - H3DII-22
  - H3DII-31
  - H3DII-39

  - H3DII-50
  - H3D-22
  - H3D-31
  - H3D-39
  - H2D-22
  - H2D-39
  - CFV
  - CFH
  - CF-22
  - CF-31
  - CF-39
  - V96C
  - Lusso
  - Lunar
  - Stellar
  - Stellar II
  - HV
- ISG 2020x1520
- Ikonoskop
  - A-Cam dII Panchromatic
  - A-Cam dII
- Imacon
  - Ixpress 96, 96C
  - Ixpress 384, 384C (single shot only)
  - Ixpress 132C
  - Ixpress 528C (single shot only)
- JaiPulnix
  - BB-500CL
  - BB-500GE
- Kinefinity
  - KineMINI
  - KineRAW Mini
  - KineRAW S35
- Kodak
  - DC20
  - DC25
  - DC40
  - DC50
  - DC120
  - DCS200
  - DCS315C
  - DCS330C
  - DCS420
  - DCS460
  - DCS460A
  - DCS460D

  - DCS520C
  - DCS560C
  - DCS620C
  - DCS620X
  - DCS660C
  - DCS660M
  - DCS720X
  - DCS760C
  - DCS760M
  - EOSDCS1
  - EOSDCS3B
  - NC2000F
  - ProBack
  - PB645C
  - PB645H
  - PB645M
  - DCS Pro 14n
  - DCS Pro 14nx
  - DCS Pro SLR/c
  - DCS Pro SLR/n
  - C330
  - C603
  - P850
  - P880
  - S-1
  - Z980
  - Z981
  - Z990
  - Z1015
  - KAI-0340
- Konica
  - KD-400Z
  - KD-510Z
- Leaf
  - AFi 5
  - AFi 6
  - AFi 7
  - AFi-II 6
  - AFi-II 7
  - AFi-II 10
  - AFi-II 10R
  - Aptus-II 5
  - Aptus-II 6
  - Aptus-II 7
  - Aptus-II 8
  - Aptus-II 10

  - Aptus-II 12
  - Aptus-II 12R
  - Aptus 17
  - Aptus 22
  - Aptus 54S
  - Aptus 65
  - Aptus 65S
  - Aptus 75
  - Aptus 75S
  - Cantare
  - Cantare XY
  - CatchLight
  - CMost
  - Credo 40
  - Credo 50
  - Credo 60
  - Credo 80 (low compression mode only)
  - DCB-II
  - Valeo 6
  - Valeo 11
  - Valeo 17
  - Valeo 17wi
  - Valeo 22
  - Valeo 22wi
  - Volare
- Leica
  - C (Typ 112)
  - Digilux 2
  - Digilux 3
  - Digital-Modul-R
  - D-LUX2
  - D-LUX3
  - D-LUX4
  - D-LUX5
  - D-LUX6
  - D-Lux (Typ 109)
  - M8
  - M8.2
  - M9
  - M (Typ 240)
  - M (Typ 262)
  - Monochrom (Typ 240)
  - Monochrom (Typ 246)
  - M-E
  - M-P
  - R8

    - Q (Typ 116)
    - S
    - S2
    - S (Typ 007)
    - SL (Typ 601)
    - T (Typ 701)
    - X1
    - X (Typ 113)
    - X2
    - X-E (Typ 102)
    - X-U (Typ 113)
    - V-LUX1
    - V-LUX2
    - V-LUX3
    - V-LUX4
    - V-Lux (Typ 114)
    - X VARIO (Typ 107)
- Lenovo a820
- Logitech Fotoman Pixtura
- Mamiya ZD
- Matrix 4608x3288
- Micron 2010
- Minolta
    - RD175
    - DiMAGE 5
    - DiMAGE 7
    - DiMAGE 7i
    - DiMAGE 7Hi
    - DiMAGE A1
    - DiMAGE A2
    - DiMAGE A200
    - DiMAGE G400
    - DiMAGE G500
    - DiMAGE G530
    - DiMAGE G600
    - DiMAGE Z2
    - Alpha/Dynax/Maxxum 5D
    - Alpha/Dynax/Maxxum 7D
- Motorola PIXL
- Nikon
    - D1
    - D1H
    - D1X
    - D2H
    - D2Hs
    - D2X

- D2Xs
- D3
- D3s
- D3X
- D4
- D4s
- D40
- D40X
- D5
- D50
- D60
- D70
- D70s
- D80
- D90
- D100
- D200
- D300
- D300s
- D500
- D600
- D610
- D700
- D750
- D800
- D800E
- D810
- D810A
- D3000
- D3100
- D3200
- D3300
- D5000
- D5100
- D5200
- D5300
- D5500
- D7000
- D7100
- D7200
- Df
- 1 AW1
- 1 J1
- 1 J2
- 1 J3
- 1 J4

  - 1 J5
  - 1 S1
  - 1 S2
  - 1 V1
  - 1 V2
  - 1 V3
  - E700 ("DIAG RAW" hack)
  - E800 ("DIAG RAW" hack)
  - E880 ("DIAG RAW" hack)
  - E900 ("DIAG RAW" hack)
  - E950 ("DIAG RAW" hack)
  - E990 ("DIAG RAW" hack)
  - E995 ("DIAG RAW" hack)
  - E2100 ("DIAG RAW" hack)
  - E2500 ("DIAG RAW" hack)
  - E3200 ("DIAG RAW" hack)
  - E3700 ("DIAG RAW" hack)
  - E4300 ("DIAG RAW" hack)
  - E4500 ("DIAG RAW" hack)
  - E5000
  - E5400
  - E5700
  - E8400
  - E8700
  - E8800
  - Coolpix A
  - Coolpix P330
  - Coolpix P340
  - Coolpix P6000
  - Coolpix P7000
  - Coolpix P7100
  - Coolpix P7700
  - Coolpix P7800
  - Coolpix S6 ("DIAG RAW" hack)
  - Coolscan NEF
- Nokia
  - N95
  - X2
  - 1200x1600
  - Lumia 1020
  - Lumia 1520
- Olympus
  - AIR A01
  - C3030Z
  - C5050Z
  - C5060Z

- C7070WZ
- C70Z,C7000Z
- C740UZ
- C770UZ
- C8080WZ
- X200,D560Z,C350Z
- E-1
- E-3
- E-5
- E-10
- E-20
- E-30
- E-300
- E-330
- E-400
- E-410
- E-420
- E-450
- E-500
- E-510
- E-520
- E-600
- E-620
- E-P1
- E-P2
- E-P3
- E-P5
- E-PL1
- E-PL1s
- E-PL2
- E-PL3
- E-PL5
- E-PL6
- E-PL7
- E-PM1
- E-PM2
- E-M1
- E-M10
- E-M10 Mark II
- E-M5
- E-M5 Mark II
- Pen F
- SP310
- SP320
- SP350
- SP500UZ

  - SP510UZ
  - SP550UZ
  - SP560UZ
  - SP565UZ
  - SP570UZ
  - STYLUS1
  - STYLUS1s
  - SH-2
  - SH-3
  - TG-4
  - XZ-1
  - XZ-2
  - XZ-10
- OmniVision OV5647 (Raspberry Pi)
- Panasonic
  - DMC-CM1
  - DMC-FZ8
  - DMC-FZ18
  - DMC-FZ28
  - DMC-FZ30
  - DMC-FZ35/FZ38
  - DMC-FZ40
  - DMC-FZ50
  - DMC-FZ7
  - DMC-FZ70
  - DMC-FZ100
  - DMC-FZ150
  - DMC-FZ200
  - DMC-FZ300/330
  - DMC-FZ1000
  - DMC-FX150
  - DMC-G1
  - DMC-G10
  - DMC-G2
  - DMC-G3
  - DMC-G5
  - DMC-G6
  - DMC-G7/G70
  - DMC-GF1
  - DMC-GF2
  - DMC-GF3
  - DMC-GF5
  - DMC-GF6
  - DMC-GF7
  - DMC-GH1
  - DMC-GH2

  - DMC-GH3
  - DMC-GH4
  - AG-GH4
  - DMC-GM1
  - DMC-GM1s
  - DMC-GM5
  - DMC-GX1
  - DMC-GX7
  - DMC-GX8
  - DMC-GX80/85
  - DMC-L1
  - DMC-L10
  - DMC-LC1
  - DMC-LX1
  - DMC-LF1
  - DMC-LX2
  - DMC-LX3
  - DMC-LX5
  - DMC-LX7
  - DMC-LX100
  - DMC-TZ60/61/SZ40
  - DMC-TZ70/71/ZS50
  - DMC-TZ80/81/85/ZS60
  - DMC-TZ100/101/ZS100
- Pentax
  - *ist D
  - *ist DL
  - *ist DL2
  - *ist DS
  - *ist DS2
  - GR
  - K10D
  - K20D
  - K100D
  - K100D Super
  - K110D
  - K200D
  - K2000/K-m
  - K-x
  - K-r
  - K-01
  - K-1
  - K-3
  - K-3 II
  - K-30
  - K-5

  - K-5 II
  - K-5 IIs
  - K-50
  - K-500
  - K-7
  - K-S1
  - K-S2
  - MX-1
  - Q
  - Q7
  - Q10
  - QS-1
  - Optio S
  - Optio S4
  - Optio 33WR
  - Optio 750Z
  - 645D
  - 645Z
- PhaseOne
  - IQ140
  - IQ150
  - IQ160
  - IQ180
  - IQ180 IR
  - IQ250
  - IQ260
  - IQ260 Achromatic
  - IQ280
  - IQ3 50MP
  - IQ3 60MP
  - IQ3 80MP
  - IQ3 100MP
  - LightPhase
  - Achromatic+
  - H 10
  - H 20
  - H 25
  - P 20
  - P 20+
  - P 21
  - P 25
  - P 25+
  - P 30
  - P 30+
  - P 40+
  - P 45

    - P 45+
    - P 65
    - P 65+
- Photron BC2-HD
- Pixelink A782
- Polaroid x530 (embedded JPEGs only)
- PtGrey GRAS-50S5C
- Ricoh
    - GR
    - GR Digital
    - GR Digital II
    - GR Digital III
    - GR Digital IV
    - GR II
    - GX100
    - GX200
    - GXR MOUNT A12
    - GXR MOUNT A16 24-85mm F3.5-5.5
    - GXR, S10 24-72mm F2.5-4.4 VC
    - GXR, GR A12 50mm F2.5 MACRO
    - GXR, GR LENS A12 28mm F2.5
    - GXR, GXR P10
- Rollei d530flex
- RoverShot 3320af
- SMaL
    - Ultra-Pocket 3
    - Ultra-Pocket 4
    - Ultra-Pocket 5
- STV680 VGA
- SVS SVS625CL
- Samsung
    - EX1
    - EX2F
    - GX-1L
    - GX-1S
    - GX10
    - GX20
    - Galaxy NX (EK-GN120)
    - Galaxy S7 (SM-G935F)
    - NX1
    - NX5
    - NX10
    - NX11
    - NX100
    - NX1000
    - NX1100

  - NX20
  - NX200
  - NX210
  - NX2000
  - NX30
  - NX300
  - NX300M
  - NX3000
  - NX500
  - NX mini
  - Pro815
  - WB550
  - WB2000
  - S85 (hacked)
  - S850 (hacked)
  - Galaxy S3
  - Galaxy Nexus
- Sarnoff 4096x5440
- Seitz
  - 6x17
  - Roundshot D3
  - Roundshot D2X
  - Roundshot D2Xs
- Sigma (embedded JPEGs only)
  - SD9
  - SD10
  - SD14
  - SD15
  - SD1
  - SD1 Merill
  - DP1
  - DP1 Merill
  - DP1S
  - DP1X
  - DP2
  - DP2 Merill
  - DP2S
  - DP2X
  - DP3 Merill
  - dp0 Quattro
  - dp1 Quattro
  - dp2 Quattro
  - dp3 Quattro
- Sinar
  - eMotion 22
  - eMotion 54

  - eSpirit 65
  - eMotion 75
  - eVolution 75
  - 3072x2048
  - 4080x4080
  - 4080x5440
  - STI format
  - Sinarback 54
- Sony
  - A7
  - A7 II
  - A7R
  - A7R II
  - A7S
  - A7S II
  - ILCA-68 (A68)
  - ILCA-77M2 (A77-II)
  - ILCE-3000
  - ILCE-5000
  - ILCE-5100
  - ILCE-6000
  - ILCE-6300
  - ILCE-QX1
  - DSC-F828
  - DSC-R1
  - DSC-RX1
  - DSC-RX1R
  - DSC-RX1R II
  - DSC-RX10
  - DSC-RX10II
  - DSC-RX10III
  - DSC-RX100
  - DSC-RX100II
  - DSC-RX100III
  - DSC-RX100IV
  - DSC-V3
  - DSLR-A100
  - DSLR-A200
  - DSLR-A230
  - DSLR-A290
  - DSLR-A300
  - DSLR-A330
  - DSLR-A350
  - DSLR-A380
  - DSLR-A390
  - DSLR-A450

  - DSLR-A500
  - DSLR-A550
  - DSLR-A560
  - DSLR-A580
  - DSLR-A700
  - DSLR-A850
  - DSLR-A900
  - NEX-3
  - NEX-3N
  - NEX-5
  - NEX-5N
  - NEX-5R
  - NEX-5T
  - NEX-6
  - NEX-7
  - NEX-C3
  - NEX-F3
  - NEX-VG20
  - NEX-VG30
  - NEX-VG900
  - SLT-A33
  - SLT-A35
  - SLT-A37
  - SLT-A55V
  - SLT-A57
  - SLT-A58
  - SLT-A65V
  - SLT-A77V
  - SLT-A99V
  - XCD-SX910CR
  - IMX135-mipi 13mp
  - IMX135-QCOM
  - IMX072-mipi
  - IMX298-mipi 16mp
  - IMX219-mipi 8mp
- YUNEEC CGO4

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LibRaw: raw images processing library

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RawSpeed library

RawSpeed - RAW file decoder.

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LibXML2

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Adobe XMP SDK

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