

rRAW

RAW converter for RISC OS

© Anton Reiser

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Introduction RAW files contain more information as the JPEG created by your DSLR. rRAW let you use this.

rRAW can read

CR2 Canon

NEF Nikon

ARW Sony

ORF Olympus

PEF Pentax (some)

DNG created by software and some cameras.

This software is beta.

Installation



You need RISC OS 5 to use rRAW and a lot of memory. It may work with RO4, but the limited wimp slot size of 28 MB may not work with all files and functions.

Copy !rRAW from the zipfile to the desired location. Thats all.

Start



Drag a directory that contains RAW files to the rRAW icon on the iconbar. rRAW tries to identify Text, Data and DOS typed files bigger than 4 MB as RAW files. You can configure this individually.

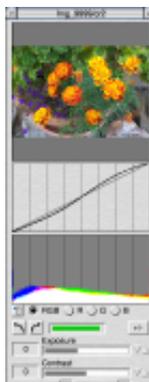
The Thumbnail window give you a filer-like view of images and directories.



Double click to a thumbnail to load the RAW file.
The Preview window shows the decoded image.



In the Tool window shows the histogram and you can change some parameters used for decoding.

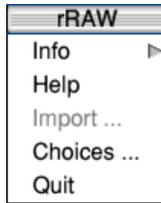


Iconbar



Drag a RAW file to the iconbar icon to load it.

Drag a directory containing RAW files to the iconbar icon to open the thumbnail window.



Info Shows some information about rRAW, most useful the programm version.

Help Shows some minimal help text.

Import.. Future option.

Choices... Configure some presets.



Thumbnails *Hide filetype* strips the DOS extension, if any.
E.g *IMG_1234/CR2* is shown as *IMG_1234*.

Large/Full info, *Sort by name*, *date*, *type* and *Reverse sort* used in the thumbnail window.

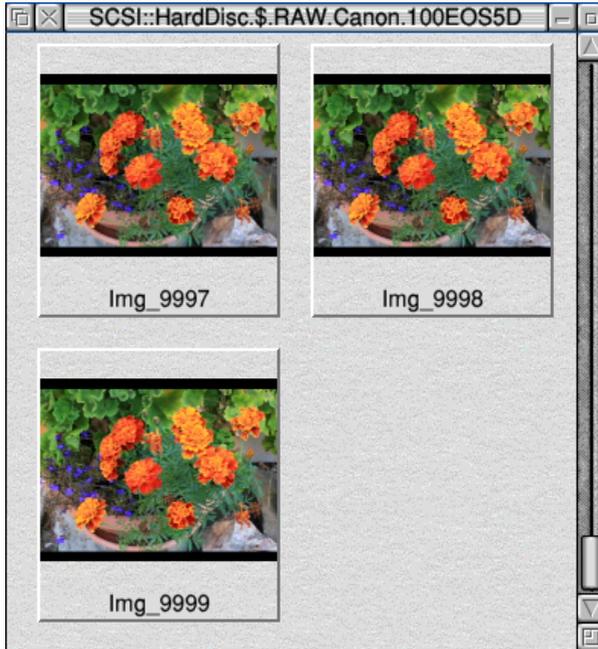
JPEG show *JPEG* too

Recursive show all from subdirectories too.

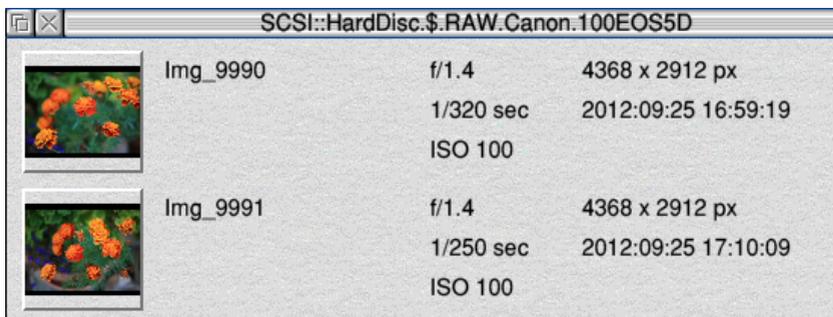
	All options can be changed temporarily within the thumbnail window.
Accept as RAW	Filetypes that rRAW also accept as RAW files in the thumbnail window. Files smaller than the <i>minimal size</i> are ignored. If <i>Update filetype</i> is set, any file rRAW successfully loads is set to <i>RAWimg (A7C)</i> .
Save default	Presets used in the save dialog. Sensible values for the JPEG quality are between 50 and 99.
Warning	Threshold value for over-/underexposure warning.
Canon	Use whitebalance multipliers from the CR2 file for preselection or colour temperature, otherwise they are calculated from the RGB camera primaries, as like for other models.
Choices	
Quit	Finish the program and free all claimed memory.

Thumbnails

To open this window, drag a directory to the rRAW icon on the iconbar or any open main window from rRAW. Only directories and RAW files are shown. At start the thumbnails are displayed in one column on the left side on the screen, but you can resize and move the window.



Full info mode:



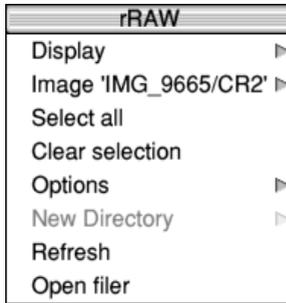
The thumbnails are rotated according the orientation tag from EXIF metadata. rRAW use the thumbnail from the RAW file, created from your camera.

Mouse

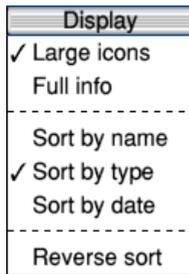
Double-Click on a image loads the RAW data and open the preview window.

Double-Click on a directory scans this for RAW files.
Close-Adjust-Click moves one level up in the directory hierarchy.

Menu



Display



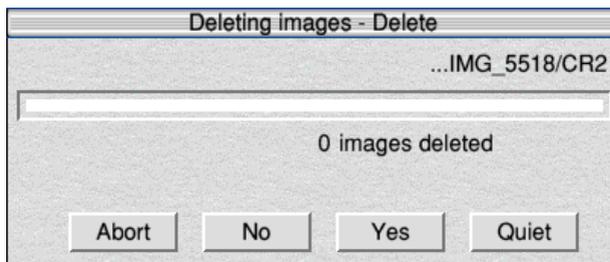
**Image/
Directory/
Selection**



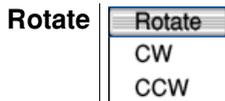
Copy Future option

Rename Future option

Delete

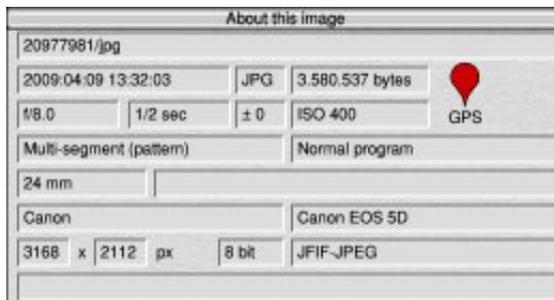


Delete selected files.



Rotate the selected images clockwise or counterclockwise. This updates the EXIF metadata in your RAW file!

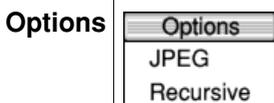
Info Shows information about the selected file and some metadata found in the RAW.



If rRAW find GPS data, you may drag the GPS icon directly to !MapView or !RiscOSM to show the location.

Stamp Update the timestamp of the selected files with the date found in the EXIF tag *DateTimeOriginal*. If set in Choices, the filetype is changed to *RAWimg (A7C)* too.

Select all Select all images



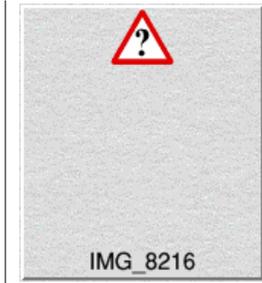
Show JPEG as thumbnails too. Experimental.
Recursive scans subdirectories too.

Clear selection Deselect all selected images

Refresh Rescan the directory. Useful with network drives.

Open filer Open the filer window containing the RAW files.

Problems If rRAW sees any problem with the file, a questionmark is shown.



Preview The image in the preview window give you a impression, how the converted image would look like. You can zoom in and out, crop and move around.

**Mouse
Zoom**



Shift-Alt change into zoom mode.
Shift-Alt-Select-Drag let you scale the region of interest.
Shift-Alt-Select-Double-Click scale to 100 % view.
Shift-Alt-Adjust-Click works as *^1* or *Fit screen*.

Whitebalance



Ctrl-Select-Click picks the colour of the area around the mouse pointer and adjust the whitebalance to fit this area as neutral.

Crop



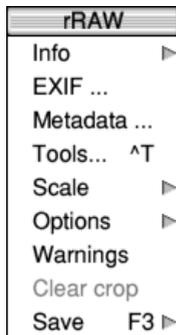
Alt-Select-Drag to crop the image.

Move

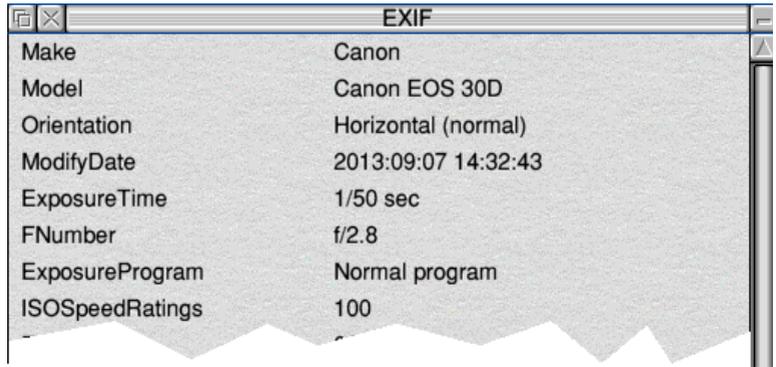


Shift-Select let you move around.

Menu

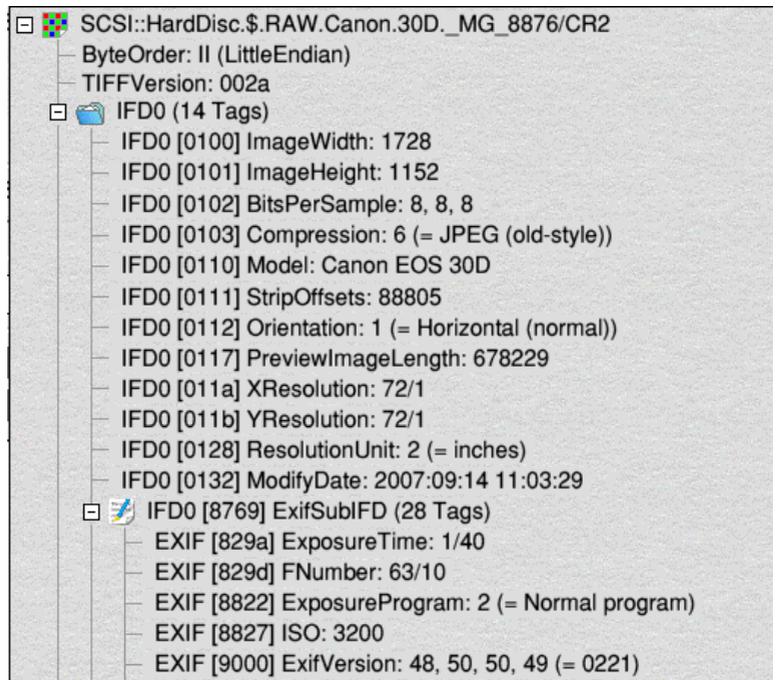


EXIF Open a window with full EXIF information.

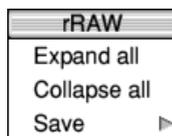


Tools Open the tool window if closed, or bring it into the front if in background.

Metadata Shows a lot of diagnostic information as treeview.



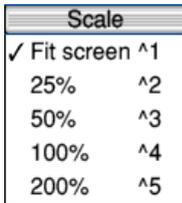
Menu in this window



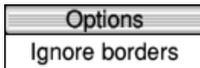
Expand/Collapse all nodes.

Save let you export the data as text, and if a JPEG node selected, the embedded JPEG.

Scale Leads to a submenu to scale the preview.

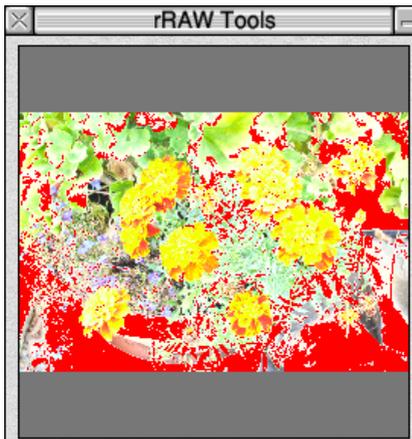


Options



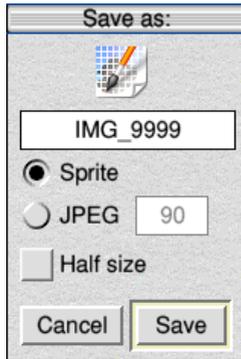
Use the full sensor area, if activated.

Warnings Show overexposed area in the tool-window preview in red, underexposed in blue. Switch on/off here.



Clear crop Reset to the default image size, if the crop function is used.

Save

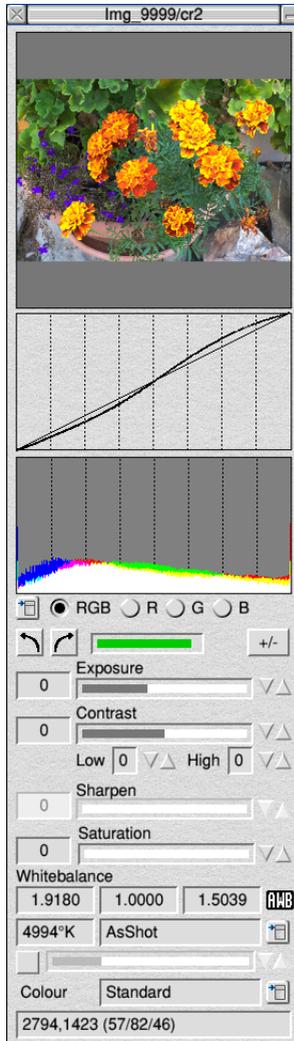


To save the decoded image as sprite or JPEG drag the icon to a directory in the usual way. *Half size* save in reduced size without interpolation in the demosaicing process.

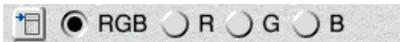
If the name contain a DOS extension (e.g. *.NEF*), it is stripped.

Existing files are overwritten!

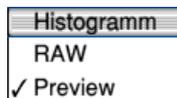
Tools The tool window give you some information and let you adjust options for the way the RAW is converted.



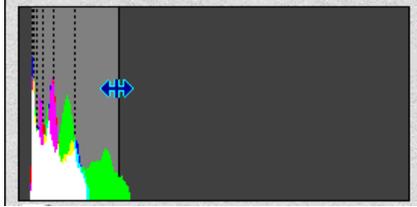
Histogramm



Select the histogram type by the menu button. *Preview* is the default.



The radio buttons let you select the displayed image channels. In RAW histogram view you can adjust the whitelevel by click and drag.



Progressbar



Shows the progress of image decoding.

Rotate



Select-Click to rotate counter-clockwise or clockwise. *Adjust-Click* reverse the direction. This is only used in the preview window. To change rotation permanently, use the 'Rotate' option in the thumbnail window.

Only standard, 90° CW and 90° CCW are supported.

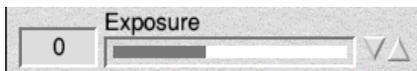
Reset



Click to reset to the default adjustments (except rotation, whitebalance and whitelevel).

Exposure

You can adjust the exposure from -2 to 3 in 1/6 steps. Default is 0. The value represents f-stops.



Drag the slider to adjust the exposure.

Select-Click to the arrows to change the exposure in 1/6 steps.

Adjust-Click reverse the direction.

Holding *Shift* while click will change the exposure in 1/1 steps.

Contrast

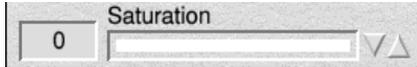
You can adjust the contrast from -4 to +4. Default is 0. Additional you can increase the contrast in shadow and lights independently.



Drag the slider to adjust the contrast.

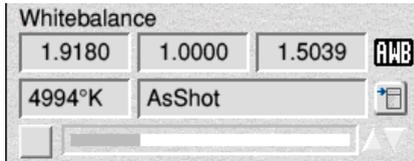
Select-Click to the arrows to change the contrast value.
Adjust-Click reverse the direction.

Saturation You can adjust the saturation from 0 to +4. Default is 0.



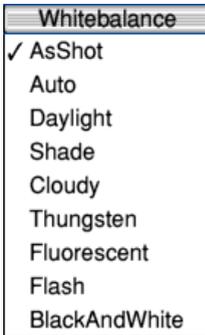
Drag the slider to adjust the saturation.
Select-Click to the arrows to change the saturation value.
Adjust-Click reverse the direction.

White balance There are three different ways to adjust the whitebalance.



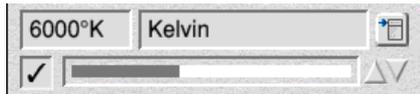
- standard illumination (Preselection)
- by colour temperature (Kelvin)
- manual by define a neutral point in the image (Custom)

Preselection



AsShot	as found in RAW
Auto	calculated by rRAW
Daylight	5200°K
Shade	7000°K
Cloudy	6000°K
Thungsten	3200°K
Fluorescent	3964°K
Flash	2800°K

Kelvin You can select the colour temperature from 2.900 °K to 10.900 °K in 100 °K steps. First activate the checkbox to select this mode.



Drag the slider to adjust the kelvin value.

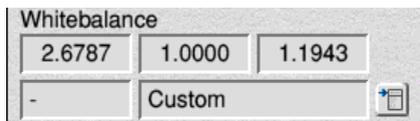
Select-Click to the arrows to change the kelvin value.

Adjust-Click reverse the direction.

Custom

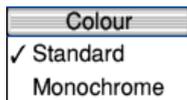
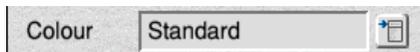
Ctrl-Select-Click at a point in the preview that should be in neutral colours. Avoid pure white or black. Noisy areas are not suitable too.

A area of 3 x 3 pixel around the selected point is used to calculate the multipliers for the R and B channel, so that R and B results in the same value as G.



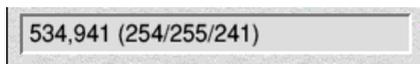
The multipliers used for the selected white-balance are shown in the lower part of the tool window. Green is always used as reference. rRAW tries to guess the correlated colour temperature.

Colour



Here you can change the colour interpretation.

Infofield



Show the coordinates and RGB values of the pixel under the mouse pointer.

Keyboard shortcuts	^T	Open/close tool window
	^1	Scale <i>Fit screen</i>
	^2	Scale to 25%
	^3	Scale to 50%
	^4	Scale to 100%
	^5	Scale to 200%
	F3	Save as

MimeMap | You may add some lines like this ones to your MimeMap file in *!Boot.Resources.!Internet.files* to autoselect the filetype by the filesystem:

<i>image/x-canon-cr2</i>	<i>RAWimg</i>	<i>a7c</i>	<i>.cr2</i>
<i>image/x-nikon-nef</i>	<i>RAWimg</i>	<i>a7c</i>	<i>.nef</i>
<i>image/x-sony-arw</i>	<i>RAWimg</i>	<i>a7c</i>	<i>.arw</i>
<i>image/x-olympus-orf</i>	<i>RAWimg</i>	<i>a7c</i>	<i>.orf</i>
<i>image/x-pentax-pef</i>	<i>RAWimg</i>	<i>a7c</i>	<i>.pef</i>
<i>application/x-dng</i>	<i>RAWimg</i>	<i>a7c</i>	<i>.dng</i>

Maker specific notes

Canon Canon mRAW and sRAW are no real RAW files. There is some experimental code to interpret this data. Such files are marked with a warning symbol in the thumbnail window.

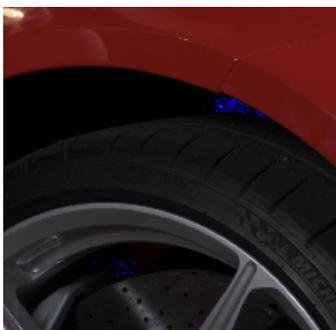


From DP-RAW (Dual Pixel), e.g. created by EOS 5D IV only one RAW is used.

Nikon rRAW can't read the auto whitebalance from the NEF, so the whitebanlance must set manually.

Sony Some ARW hold no information about the auto whitebalance, so the whitebanlance must set manually.

DNG Sometimes some tiles of the image will be broken. This is a bug in rRAW.



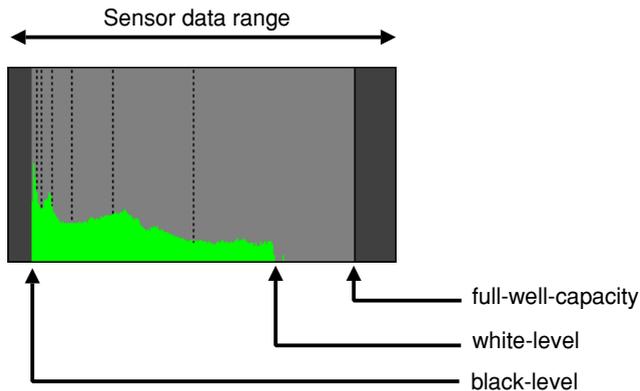
JPEG You will loose some border pixel by editing JPEG images with rRAW.

Technical background

The sensor data in the RAW files are record as linear values. This mean double light doubles the value. For 12 bit data the values are in the range from 0 to 4095, for 14-bit-data from 0 to 16383.

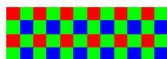
Not all models record totally black as 0; some (usually Canon) use a offset. This way the (negative) noise is recorded too (important for astro-photographs), otherwise this is clipped a 0 by the camera. This value for totally black is called *black level*. Every sensor has a point where more light don't result in a higher values. This is called the *full-well-capacity*. The hightlights are clipped at this point. Theoretical this is at 4095 or 16383. In reality this values are often lower, depending on the way the manufactuar has chosen to record the data.

The value, representing the brightest area in the image is called the *white level*. This may be the same as the full-well-capacity or lower.



rRAW knows the full-well-capacity only for some models. The white-level is guessed from the histogramm data.

CFA In a typical sensor the colour filter are mosaic like arranged. This is called *Colour-Filter-Array* (CFA). It may look like this:



This sample is arranged in RGGB order.

De-mosaicing

One important task of a RAW-converter is to guess the missing colours for every pixel. E.g. the green and blue values for a pixel with a filter for the red colour. This process is called *demosaicing*. There are different ways to do this. All with

advantages and disadvantages. Mostly better results cost more processor time.

rRAW use linear interpolation with some direction weighted calculations.

White-balance

Digital still camera sensors knows nothing about the colour of the illumination light. The process to adjust the sensor data so that white looks white and grey looks grey is called *white-balance*. Technical the recorded values are corrected in that way, that for non-colour pixel the values for every color chanel are the same.

The camera software tries to guess the colour of the light. rRAW use this information if available.

Colour-transformation

Different sensor have different colour filters. A converter should know this characteristics, the manufacturar don't publish. rRAW use the same data like ddraw, originally from the Adobe DNG converter.

Highlight recovery

Usually the green chanal is the first where saturation is reached. At such pixel the red and blue channels contain still mostly useful informations and can used to guess a suitable green value. This is called *highlight-recovery*.

If nessesary rRAW trys to recover highlights. If the guess of the whitelevel goes wrong, some highlights are mostly pink.

Colour-space

The output colourspace used by rRAW is sRGB.