

Graham's Photoblog Newsletter

For Week Ending 10th April 2021



Photography on a Budget Series

At the time of writing I have completed parts 1-6 of this new YouTube series looking at using early generation digital cameras as an entry into digital photography for those who either want to get better images than their smartphones capture or want to consider upgrading their existing camera kit.



This is one of the cameras that I purchased for this series A 2006 Canon 5D. This full frame 12.6M sensor camera produces outstanding images. The user interface is nothing like the later generation cameras with live view and video recording capabilities but it does slow you down and makes you enjoy the creativity of photography. Being in total control of the output images brings immense satisfaction.

No face and eye detect just a basic 9 point AF system but it works.

With a totally optical viewfinder, with just basic exposure information, users who have previously used a "live view" system to compose the images may find this at first a little difficult. There is a replay LCD screen however it is only a low resolution 2.5 inch 230k dot display!

When introduced it cost an eye watering £2539 in the UK for body only - about the same price as a new 5D mk IV that is the current model.

Throughout this series my goal was to show that unless you are a professional photographer (by definition someone who earns a living through photography) it is not necessary to continually follow new trends in camera bodies. Given that most people today will probably only show their work on platforms like Facebook and Instagram any advantage in new technology is immediately cancelled out by the compression techniques used on these platforms.

If you produce “photobooks”, even at A4 print sizes, you do not need high megapixel cameras either.

It is the marketing department of these large camera manufacturers that drives the perceived need to have the latest gear to get the best images.

In an article I wrote, several years ago now, called keeping it simple I discussed that no matter what camera you have, what features it boasts it all boils down to the simple fact that it is a lens with an aperture to control the amount of light reaching the sensor, a shutter to limit the time that the light is falling on the sensor and some form of gain control to alter the sensitivity of the camera (AKA ISO).

You might argue that fast Auto Focus systems (which can detect and track animal or human eyes) might be an advantage in niche picture taking situations however most of us can achieve perfect focus using single point AF or even manual focussing with focus peaking enabled. The physics of the lens will determine its sharpness (resolution), its field of view and the exit pupil size/sensor size will determine the depth of field.

Simply stated a small sensor camera needs only a lens with a small exit pupil (that’s the back lens element size effectively) and this short lens to sensor distance combines to give a very large depth of field. To some this is an advantage - wildlife shooters will want all of a small bird in focus, real estate or landscape photographers will want as much depth of field as they can get, however those looking to shoot portraits with a very shallow depth of field will struggle with this. With the largest of sensors, like full frame cameras, where the lens to sensor distance can be as much as 43mm the depth of field is very shallow and photographers have to use small apertures like F16-F22 to get the same amount of depth of field as F4 on a 1-2/3 inch sensor. This means longer shutter speeds or higher ISO settings to achieve the same exposures.

It’s a well-established fact that using a small sensor camera, especially those with a high pixel count, are the most challenging cameras when it comes to getting consistent image quality (the FZ80/82 is probably a good example here)



Shallow Depth of field from a 50mm lens at F4 on a Full Frame Camera



Large depth of field from a 1-2/3inch sensor at F4 and 50mm Effective focal length

With all the cameras that I have covered so far, the Panasonic Lumix FZ150, TZ10 (ZS7), GF1 & GF2, Canon EOS M and Canon 5D mk1 the image quality from all these 10 year old plus cameras is nothing short of amazing - after all when they were release back in the day the image quality was amazing!



My son's wedding back in 2018 with the Canon 5D MKIII.

When I first bought a second hand Canon 5D mk1 (also called the classic) with a 50mm F1.4 lens to shoot some family shots at my daughter's wedding the first test images that I put up on my 27inch iMac were "mind blowing! Not only the fact that there was far more detail visible but the colour depth and a very different "look" to what I had been seeing with micro four thirds and APS-C. Some close up shots of flowers that I took were so wonderful that the need was born.



5D with 24-105mm F4 L series lens

The very next day I went back to the little, local, camera store where I had purchased the body from and asked them to buy back the body for the price I had paid for it and I went on purchase the latest Canon body at that time (the 5D mk3) from them. Two years on and I shot my son's wedding with it.



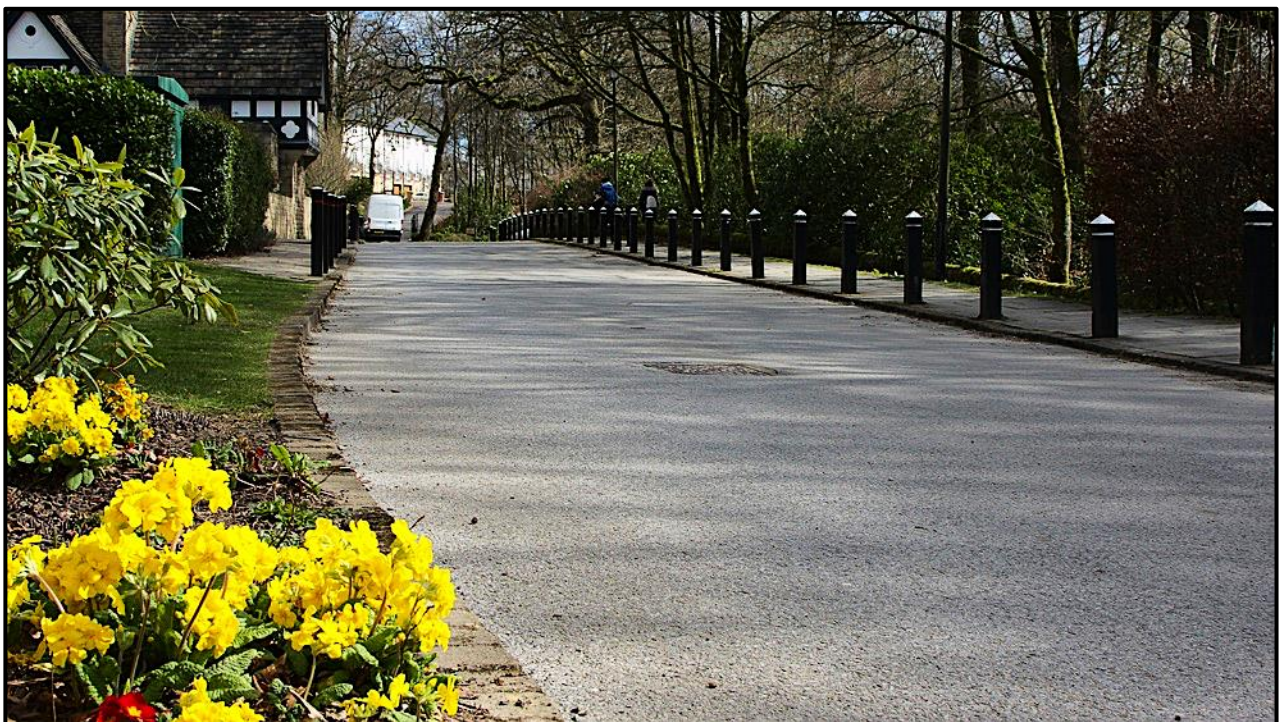
5d with 24-105mm F4 L series lens

In part 6 I took a look at a 10M Canon 40D APS-C based sensor brought out by Canon in 2007.

This camera I purchased this camera again from Ebay for £93 (body only) and it is in extremely good condition with no body or LCD screen marks, chips or dents.



The 40D was the first camera to support “live view” where the image projected by the lens onto the imaging sensor could be viewed in real-time on the LCD screen. This unfortunately turned off the dual sensor phase detect system as the mirror had to be swung up out of the way to allow the light to reach the sensor. Later cameras switched to a contrast based autofocus system taking the focus from the image projected into the optical viewfinder. You could use manual focus in live view or you could force the camera to drop the mirror and refocus before capturing the image. For its generation the camera packed an awful lot of technical innovation into it and after a full days shooting with it there wasn't a single image that I had to apply exposure compensation to, in order to correct for metering errors!



One of the images from the YouTube video of this camera [link to video](#)

Bridge Camera Image Quality Expectations

Almost every week I will receive an email from someone who is really unhappy with the image quality that they are achieving with their bridge camera, mainly the 1-2/3 inch sensor based FZ300/330 and the FZ80/82 in particular.

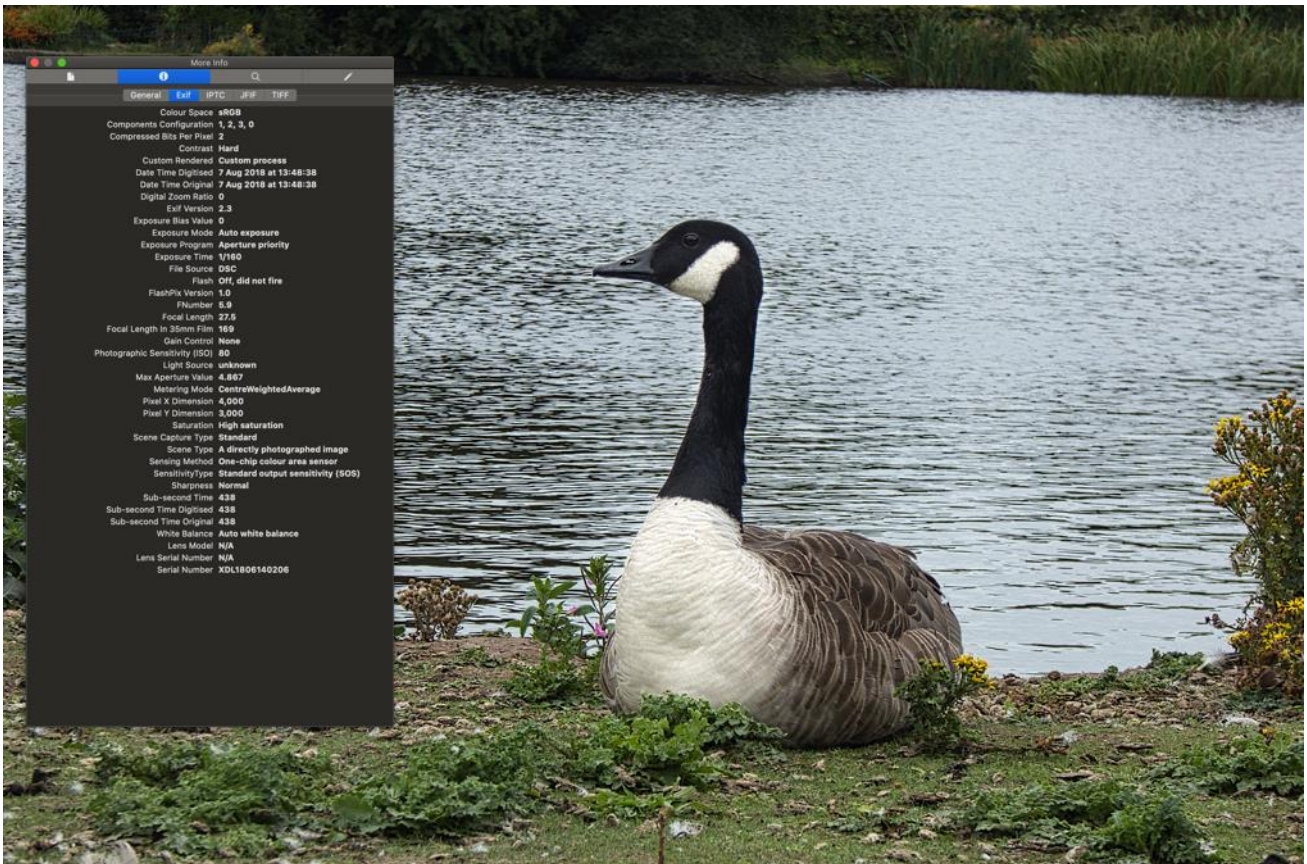
I usually ask them to send me a couple of camera images (unedited so I can examine the EXIF data from the image) and I would examine the images and give my opinion as to the image quality.

Now since 2007 when I started my YouTube channel and started to make tutorials on bridge cameras and travel zooms (starting with the FZ38 and the TZ7 cameras) I have always encouraged users to forget that the cameras have the facility to vary the ISO to make the camera more sensitive and be able to capture images in lower light levels. In essence this forces you to use the camera at the native (base) ISO of the camera - just as you would if you were shooting with a film camera using a fixed ASA/DIN film speed rating.

In “normal” lighting levels from sunlight to very overcast cloudy situations all of these cameras are capable of achieving a perfectly acceptable exposures from 1/250 @ F8 in bright sunlight down to maybe 1/30 sec @ F2.8 in very dull conditions. Those cameras with constant aperture lenses (like the FZ200 and FZ300/330) have a major advantage over those lenses which drop maybe from f2.8 at wide angle settings to F5.6 at their full telephoto setting such as in the FZ80/82.

To compensate for this loss of light through the lens it is probably only feasible to raise the ISO if the shutter speed is already at the lowest setting to prevent camera shake or stop subject motion blur.

Once you start to use ISO 400 and above you will begin to see image degradation through image noise and also the effect that Panasonic’s noise reduction software trying to reduce this effect. Slight gains can be had by shooting in RAW and performing your own sharpening and noise reduction or by using image stacking and median noise reduction if you are shooting static subjects.



A shot taken at 1/160 sec , F5.9 ISO 80 with the FZ80/82 camera on a very overcast day JPEG OOC.

Many of the problems that I have to explain is the overuse of digital zoom.

With new users to the FZ80/82 they often use the camera in the fully automatic mode (iA).

Panasonic in their questionable wisdom decided that it would be Okay to go beyond the optical zoom limit of 1200mm (effective focal length) and allow up to x2 digital zoom allowing the camera to reach what would be effectively 2400mm (EFL).

However this is achieved at a massive reduction in image quality. Compound this with increased ISO of 800 or more in low light and the images look absolutely awful.

I understand some peoples need for superzoom (and the like of the Nikon P9100) cameras in order to get wildlife shots etc. however I feel that the advertising campaigns for these cameras do not point out these shortcomings - for obvious reasons.

So the unaware potential purchaser of these cameras sees that they have massive zoom lenses, a light and very portable form factor and often the cheapest of the bridge camera offerings and go ahead and purchase the camera only to find that they haven't the knowledge to understand why the images are so bad.

They often, I'm sure, blame themselves for the poor quality images when in fact it is the camera set up conditions which were causing the problem.

Even give good lighting conditions a lens reaching out to 1200mm (EFL) is not without its problems. Not only optically but atmospheric conditions can quickly destroy any image quality.

No zoom lens can be perfect at resolving detail at all of its focal lengths and so the designers have to make some compromised design considerations.

You may have noticed that sharpness tends to fall off as you exceed 2/3 of the maximum zoom setting or about 800mm (EFL) and down at the widest angle of 20mm (EFL).

In many circumstances it may be better to use the Extended Optical Zoom. I usually choose 9MP EX zoom setting. This crops in camera (using smaller section of sensor) to get 1699mm.

I would also decrease the noise reduction to -5 in your chosen Photostyle to reduce Panasonic's aggressive noise reduction algorithm and then apply NR in post editing.

In terms of offering any advice on shooting birds with the FZ80/82, I suggest never going above ISO 200 to keep noise levels down and shoot on brighter days only, if possible.

Be prepared to post process your images - in some cases quite extensively.

Most importantly of all, get as close as you can to the birds to allow you to and fill the frame with as much of the subject as possible. I understand that in some cases this may not be possible and image compromise will be necessary.

At least 40 -50 percent of the sensor's surface area or more should be covered by the main subject to maximise fine detail and allow for post cropping with minimal loss of quality.

Finally, when you look at what you have in the palm of your hand compared to a cropped frame APS-C camera with a 400mm F2.8 IS lens combination costing over £12000 I think that you must appreciate that you aren't going to get every last feather detail and image quality but we can get fairly close taking all things into consideration when shooting.

"Equivalent" doesn't necessarily mean "the same"

A common misconception about crop factors is that when you say a lens has "an equivalent focal length," the term "equivalent" means the lens changes focal length. The cropped field of view might be equivalent, but the imaging characteristics of the lens remain unchanged!

As an example, a 60mm macro lens designed for use on an APS-C format camera is often described as being a terrific macro and portrait lens when, in fact, it's a terrific macro lens and an OK portrait lens.

The problem is that, while a 60mm lens captures the field of view of a 96mm lens when mounted on an APS-C format camera ($96\text{mm} = 60 \times 1.6$ crop factor), it doesn't produce the same degree of portrait-friendly compression as an 85mm or 100mm short-telephoto full frame portrait lens.

It frames your subject similarly, but it retains the same compression characteristics of a 60mm lens.

The only way you can retain the face-friendly attributes of an 85mm to 100mm portrait lens on a APS-C format DSLR is to use an 85mm to 100mm lens and step back about 40% further away from your subject in order to fill the frame to head-and-shoulder proportions.

As another example, when used on a full-frame ($24 \times 36\text{mm}$ imaging sensor) DSLR, a 50mm lens is considered a standard or "normal" lens. Mount the same 50mm lens on a camera containing a smaller, ($22.3 \times 14.9\text{mm}$) APS-C sensor, and the image in the viewfinder now appears as if it was captured with an 80mm lens.

The lens is still a 50mm lens, but because the imaging area of the APC-C imaging sensor is 40% smaller than a full-frame sensor, the image field of view (FOV) becomes correspondingly narrower (46.8° down to 30.3°), cropping the image field similarly to that of a narrower-angled 80mm lens.

For the same reason, a wide-angle lens on a full-frame camera effectively becomes a semi-wide or normal lens when mounted on a camera containing a smaller APS-C imaging sensor.

I think this is still one of the most confusing issues when considering lenses which will be used with adaptors on other cameras - such as using EF lenses on Canon EOS M cameras. The native lens characteristics still have to be borne in mind!



"Equivalent" doesn't necessarily mean "the same"

Rode Wireless Go II updated



THE RODE WIRELESS GO II CAN NOW BE USED AS A TINY AUDIO FIELD RECORDER

One of the great things about the Rode Wireless GO II over its predecessor is that the transmitters have built-in recorders. This allows them to keep recording internally even if they suffer from interference or go out of range of the receiver that's plugged into your camera (if you're not in the USA).

Well, Rode has now released a new firmware update for the Wireless GO II microphone system that allows the transmitters to act solely as audio recorders completely independently, without the receiver having to be plugged into your camera or even turned on.

This update means that your 2x transmitter & 1x receiver kit also acts as two field recorders. Handy if all you need to do is record audio for a voiceover without having to have the camera rolling or if you want to start adding multiple microphones and don't have enough audio inputs on your camera to record each of them on a separate track.

The device will start recording as soon as it's turned on and stop when it's turned off. But the recording is only available in uncompressed mode, which means that the 2GB of internal storage offers up to about 7 hours of recording. The device also features a safety audio track just in case the main track has clipping.

The firmware also adds low sensitivity mode for the transmitters, transmitter LED brightness adjustment and a change to the functionality of the transmitter power button to embed markers into the onboard recording.

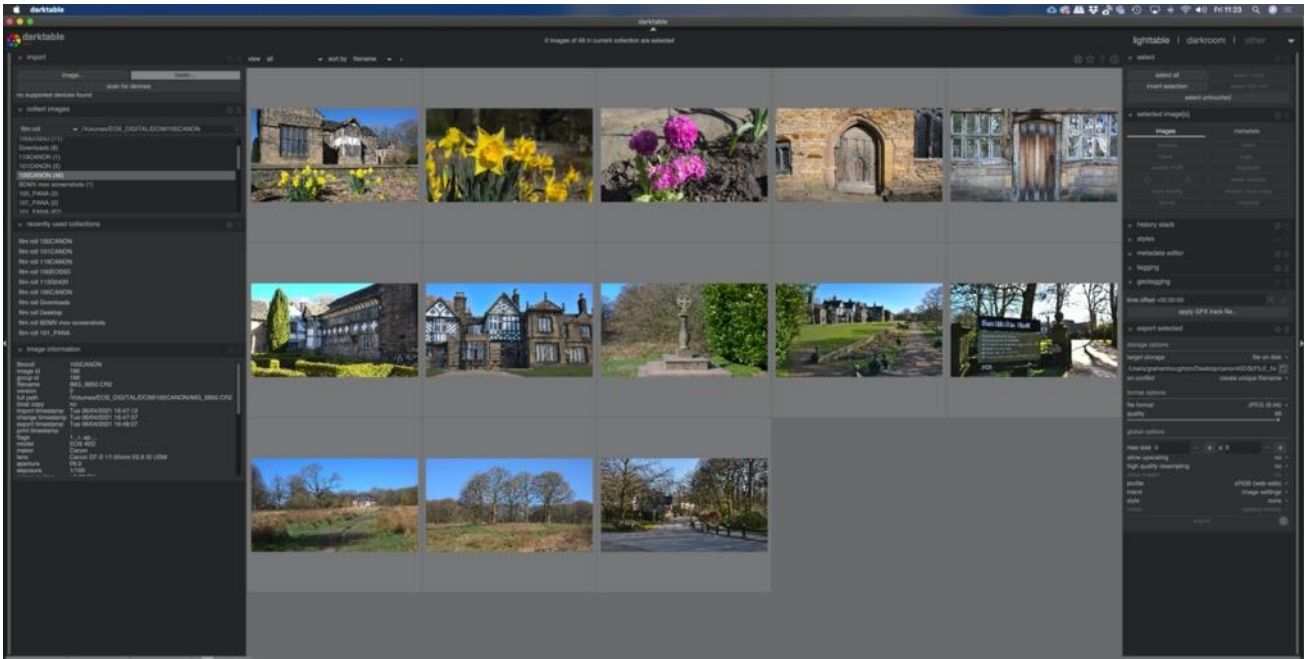
It has 3.5mm analogue TRS output, USB-C and iOS digital audio output so can be used directly with smartphones (at last without adaptors).

I've ordered one and hope to bring a full review early next week and compare its functionality to my original Rode Wireless GO which I normally pair with a Tascam DR10 pass through audio recorder for audio redundancy because of wireless drop out on the GO sometime occurring.

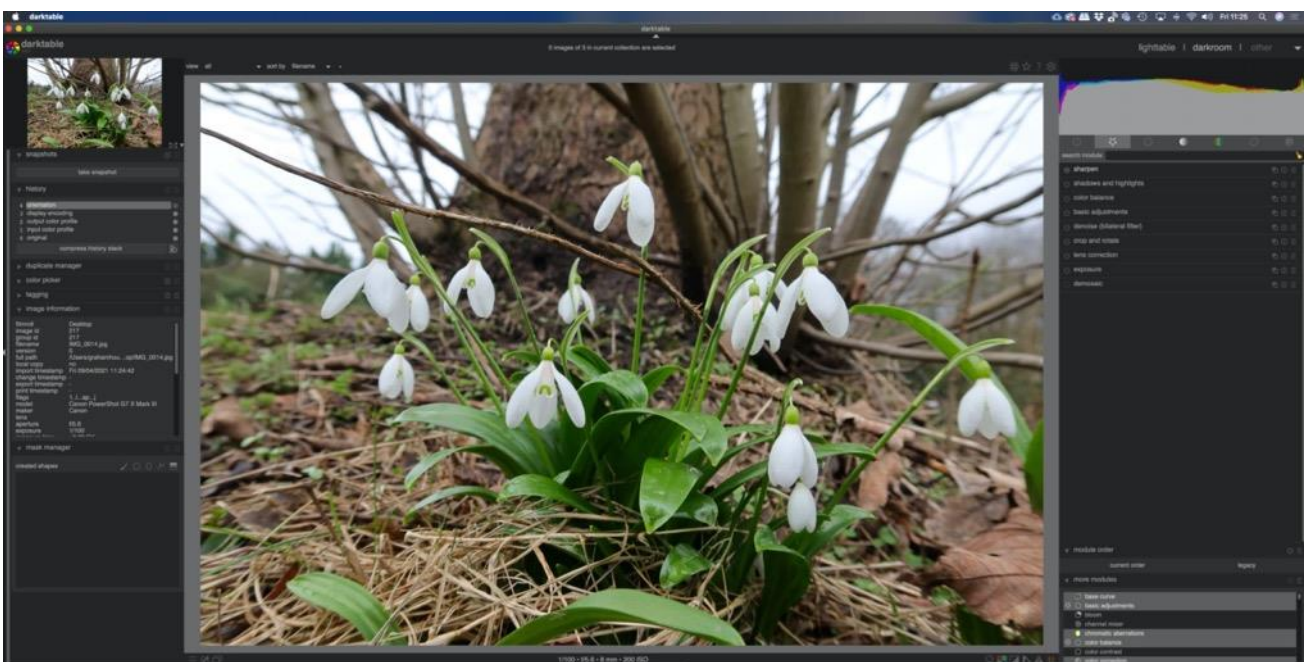
Darktable is a free and fantastic alternative to Lightroom.

I've been using Darktable as my image editor for all of my illustration images for the "photography on a budget" series. Darktable has more tools than Lightroom, and those tools have more advanced features to help you achieve your creative vision. Darktable is a free alternative for editing your RAW files and managing your photos.

Installing Darktable is very easy. To download, [click here](#) and choose your operating system. Once downloaded, unzip the file, then drag and drop it to your Applications folder if you're on a Mac. If you're on a PC, double click the .exe file and follow the on-screen prompts to finish the installation.



Once you open Darktable, your first view by default is known as the "Light Table." In the top left panel, you can import your images from your hard drive or your camera. Once your images are imported, you can then view them from the Light Table module and begin organising your photos. You can manage your files by adding tags, labels and rate them with stars. All of which will make it easy to find specific files among thousands with a simple search via the Light Table search module.

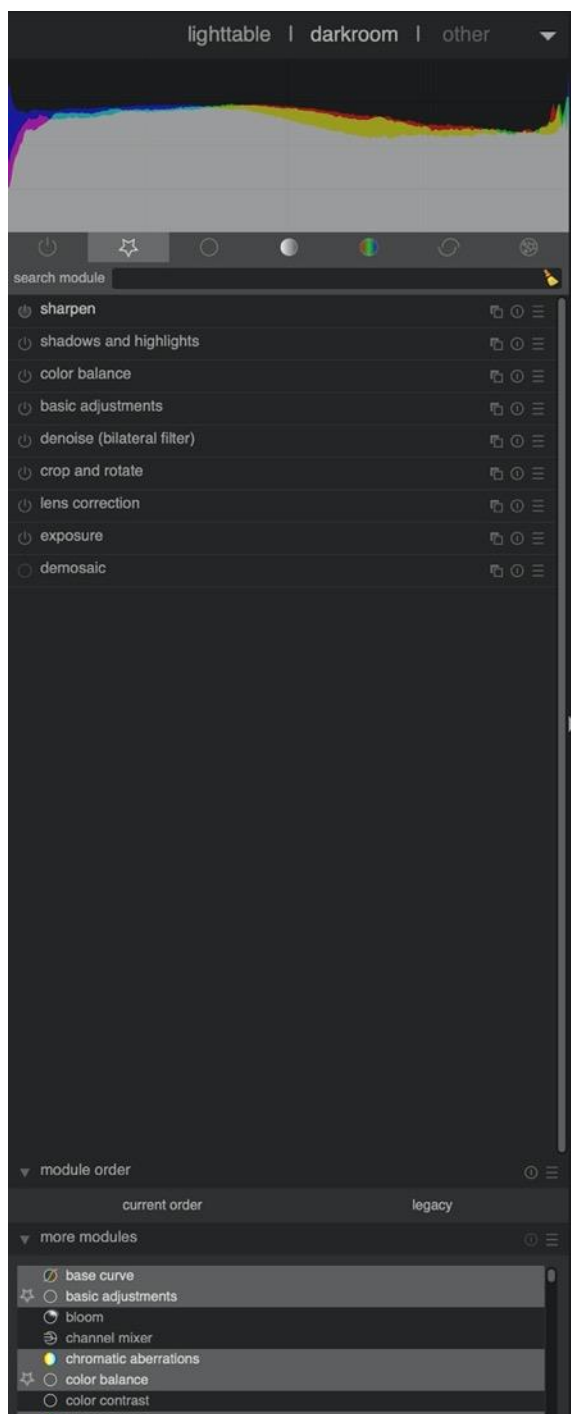


The search module is within the “Collect Images,” and you’ll need to select the “tag” item or another item via the drop-down menu (click on “film roll”). Then, type in the tag’s name for the images you’re searching for in the box to the right (hit enter or return to see the photos).

Darkroom Panel

At the top right of the Darktable interface, you’ll see another view labelled darkroom. This will take you to the editing interface for editing your photos. Make sure to have an image selected to be able to navigate to that view. You can also get to the darkroom view with the keyboard shortcut, the letter “D.” Also, “L” will take you back to the light table view. If you click on “other,” you’ll see a drop-down menu that has more views, like slideshows, prints, and a map to place your photos based on geographic location.

The Tethering view will display an interface that will update every time you take a new photo. That is if you have your compatible camera connected to your computer!



The right hand side panel has all the editing features.

The developers of Darktable have created a way for you to organise your favourite tools into a workspace.

The default workspace consists of three main editing modules. Each contains tools in one of the specific categories...

Technical: You’ll find editing tools like base curve, lens correction, white balance, and others in this module.

Colour Grading: This module contains editing tools like colour balance, levels, tone curve, and more.

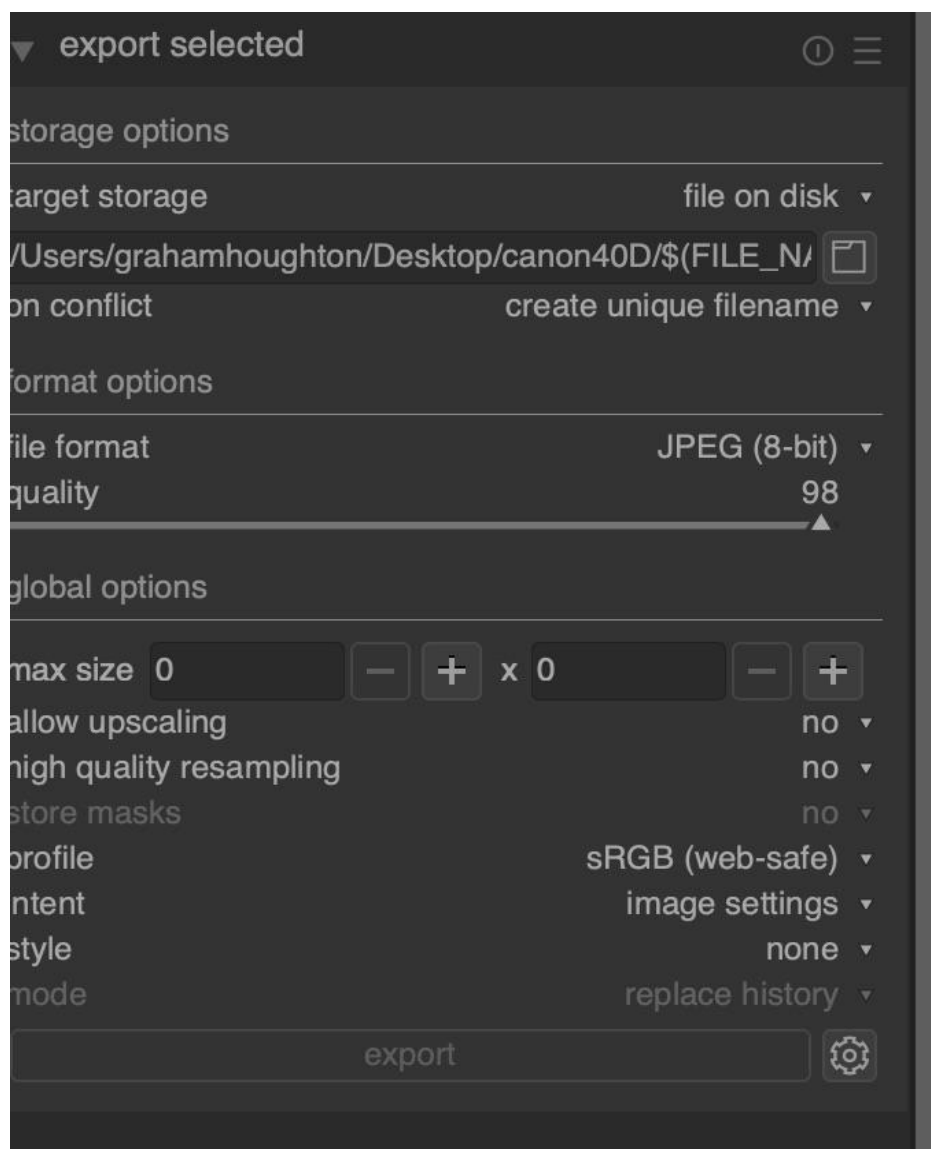
Effects: In this module, you’ll find tools for adding a vignette, grain, sharpening, and other effects. Plus some tools for retouching!

As far as editing your images in Darktable, it works like most other RAW processing apps like Lightroom, Adobe Camera Raw for editing RAW files.

Selecting and adjusting a tool will update those changes on your image. However, it is not altering the original file in any way. It creates the usual “side car” file.

The left hand panel is your workflow history and you can use this to correct an edit stage or start again.

So far I've been really please how quick and easy it was to learn how to use this program and the results have been quite impressive. Some of the edits do take a while for the preview to complete (maybe 1-2 seconds) but when dealing with these large RAW or JPEG files it is to be expected.



I'll continue using this program for the next month for both RAW and JPEG files to judge how well it performs and how easy is it for me to remember how to use it!

i.Zoom, EX Zoom, Crop or Teleconverter - Which gives the best image?

Quite a few times I get questions asked about fitting teleconverters to the FZ200/FZ300/330 and the FZ80/82.

The choice is either a x1.4 or x1.7 optical teleconverter with a matching lens support tube for the camera.

It might make some sense on the FZ200/300/330 but I still have to be convinced about fitting one on the FZ80/82.

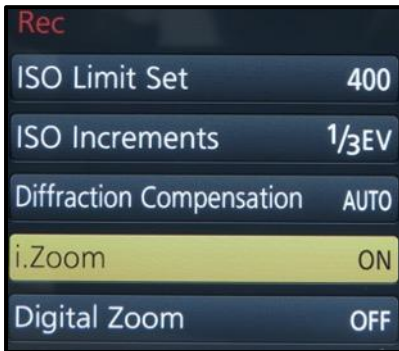
So what are the options for getting a larger image to work with



This is a x1.4 Olympus TCON-14B teleconverter that I use with the FZ330
This gives the equivalent focal length of 840mm without any light loss but it does need a tripod and lens ring for best results.



Depending upon the use of your image there is the EZ/EX zoom feature which crops into the image to produce the image and gives the equivalent focal length of 895mm with the lens at 600mm zoom setting.



The next option is to use i.Zoom and set the magnification to between x1.4 and x1.7 to achieve the same equivalent focal lengths as the teleconverter .

The first image is the FZ330 with the lens set to x24 zoom or 600mm EFL



Now with the optical teleconverter



Notice a slight loss of resolution plus some chromatic aberrations

The next image is using x1.4 i.Zoom to match the teleconverter



I notice a sharper image and no chromatic aberrations.

I recommend going no more than x1.7 as at x2 it does appear to degrade the images - however it will depend upon the use of your images it may be perfectly acceptable for small prints and social media posting. Try out various setting to determine your acceptance level of i.Zoom.

The next image is using the 2M EX zoom mode. It creates only a 1920x1080 pixel image size but gives the equivalence of 895mm focal length.



Again for small prints, social media and web illustrations the results are excellent.



The image above is cropped from the 8M EX zoom which gives 658mm EFL if you needed slightly bigger file sizes for printing.

So comparing all the images it should be apparent that the addition of the optical teleconverter does not gain any advantage, in fact there is a noticeable drop in image quality.

The EX zoom mode has the advantage that the image is cropped directly from the sensor, i.Zoom uses cropping and extrapolation to increase the image size and maintain the original pixel dimensions.

It is possible to use the EX zoom plus i.Zoom to achieve the pixel dimensions that you may require for larger prints however again be mindful of the fact that image quality will degrade slightly - but in my experience using the Panasonic LT55E and the Olympus lenses the final quality is not worth the expenditure of the lens and support tube plus the need to tripod mount the lens.



Using EX Zoom in Practical Situations



I know from the number of questions raised that the Moon is still a very popular subject to photograph- especially the "Super" and "New" Moons. They are also the subject of much frustration as getting a decent exposure can be quite a challenge unless you understand how the camera is reacting to this photographic scene.

First of all, as with all subjects it is better to try and get as big an image formed on the sensor as possible. This means zooming all the way to the maximum of the telephoto range (x24) if you are lucky enough to have a tele conversion lens such as the LT55E then you can get additional optical magnification.

However for better results I would suggest you take advantage of the "in camera" crop by using the "EZ" mode with the size set to 2.5 megapixel. Avoid using Digital Zoom when using this mode. Chose a 1:1 aspect ratio.

Now it is important to switch the camera metering mode to "Spot" as this allows the camera to calculate an exposure from a very small area on the sensor. If you leave the camera set to full area or centre weighted you will end up with just a big white orb!

With these high levels of image magnification it is essential to use a tripod. Even when the shutter speeds are as high as 1/500 sec you will find that even with the steadiest of hand holding techniques your image will lack critical sharpness (honestly!).

Switch to Aperture priority mode and dial up an aperture of f3.2 to f4 and an ISO of 100. (if you see that the ISO will not show 100 when you press the shutter release its highly likely you have one of the i.dynamic modes selected - I would suggest you turn it OFF).

As the Moon reflects the Sun's light it does not have any colour itself. It's best to shoot in Mono photostyle and if you want to add some hint of a tint then you can do this in post process editing. In Mono Photostyle select +1 sharpening and -1 noise reduction.

For the photo graph of the moon I would suggest you use the 10 second 3 picture in camera timer to take the shots.

Frame the moon centrally in the viewfinder and with the spot metering you should see the moon with plenty of detail.

AFS is the best autofocus method for this type of image. Set the timer, and then release the shutter. Allow the camera to make its 3 exposures

you will get a sequence of the 3 images recorded on your SDHC card. Process the image in your editing program, reduce the brightness, increase contrast slightly but don't over sharpen or preferably use un-sharp mask for this last process. If necessary crop a little more of the black area from the image, add your title and be amazed.

Getting Sharper Images

If your images don't appear to be sharp there may be a couple of reasons why this might be. For example I have never tested a lens that is at its sharpest at the extremes of the zoom range. As an example, if you shoot a 25-600mm EQ lens on the FZ200, you will get sharper photos at 500mm than 600mm (x20 on the zoom scale).

#1. I know it's always tempting to use maximum zoom however sometimes shooting at a little less than full zoom and then, in post-production, cropping into the image will yield sharper images.

As an example even my the Canon 100-400mm L series lens shoots sharpest at 300mm. I'm sure there are exceptions to this rule, but I haven't seen them personally. Almost all lenses are sharper somewhere between the extremes of the zoom range.

This is especially important if you are shooting a less expensive zoom lens or a kit lens on a mirror-less or DSLR camera.

Spend a little time with a tripod mounted camera and take a picture of a newspaper taped to the wall across from you at different focal lengths and apertures as I've detailed on finding a lens sweet spot on my blog before. You're likely to find quite a variation in sharpness levels depending on the focal length and generally 2 stops down from maximum aperture. Once you have established the best aperture at your chosen focal length keep a mental note of this for your next shooting session.

#2. Are you stabbing the shutter button rather than squeezing it off like you would a rifle trigger. That sudden quick button press is enough to add significant camera shake - even with mega OIS systems.

#3. Decrease your ISO is one of the best tips I can give you. Once you start to use anything but the native or base ISO you will start the image degradation process due to noise and the noise reduction algorithm in the camera applying more softening of the image as the value increases.

#4. Maybe the actual focus point chosen is not the actual point YOU wanted sharp in your image.

So here's my recipe for proper focus every time...

1. Decide if you are shooting an action photo or a photo with a stationary subject. If you're shooting a moving subject, choose continuous focus AFF or AFC and if you're shooting a stationary subject like a landscape or a portrait of a person, choose AFS.

2. Always set the focus point yourself. Don't let the camera decide as in the case with multi area methods. Get used to moving the single area focus point by pushing the side focus button and moving it with the navigation buttons the back of your camera.

If you're shooting a portrait, ALWAYS place the focus on the eye of the person closest to the camera. On the nose or face or body of the person is not good enough. If you're shooting a landscape, generally focus one-third up from the bottom of the frame, (the hyperfocal distance) however if you have a strong foreground element, you may want to focus closer.

3. Once you've focused, be extremely careful not to sway forward or backward at all. When shooting with a long lens at a wide f-stop, even a slight movement will move the focus before the shot in the AFS mode.

4. Be sure not to focus too close to the lens. A lens has a close focus distance, and camera manufacturers like to push the envelope with this distance. I usually find that if I focus right at the closest point where the lens will still focus, the result is a slightly blurry shot. Back up a little bit from the closest you can be to the subject and you'll always improve the result.

#5. If you are using a tripod it is recommended that you turn off the image stabilisation. I also recommend you use the 2 second timer or a wired remote shutter release cable to prevent any movement to the camera as you make the exposure.

#6. Check your shutter speed. OIS is a great thing to help achieve blur free images caused by hand shake at longer exposure times however it doesn't stop any subject motion that may occur in your subject. The same scenario applies for tripod mounted shots. If the subject is moving, birds on a feeder are a great example of this, you need to ensure the camera shutter speed is sufficient to stop the motion blur. It will depend upon the zoom you have on the lens but at x24 or 600mm EQ focal length this is likely to be above 1/250 second! Indoor sports are another classic case where there is sufficient light to hand hold at 1/30 second but subject motion blur ruins the images.

#7. Are you using any kind of filter in front of the lens? I've tested several ND filters, variable ND filters, CPL and UV filters and in almost every case there is some loss of image sharpness due to either loss of contrast or other optical loss due to these filters.

If you are in any doubt use the test highlighted in case #1 and check your image with a shot with and without the filter. Your lens hood not only provides shade against light causing contrast loss but also physical protection to the lens. I only advise a UV filter if you are near water and there is any danger of water splashes on the lens. I've got some expensive lenses and you won't find any filter on them, I've never had any lens scratched in over 40 years of handling lenses- however this is a personal choice.



Dust on mirrorless camera sensors – a real problem!

With mirrorless cameras the sensor is usually exposed once you remove the lens and it is important that lens changes be performed quickly to prevent dust/pollen etc from getting onto the sensor surface.

In the image above you can see how a typical dust spot on the sensor appears on the image.

(the darker blob top right third of the image) It is usually worse when you use small apertures and/or long focal length lenses.

I've been experimenting with "wet cleaning" kits to see how easy it is to spring clean the sensor without leaving any marks or damage to the sensor.

In the next issue I'll report back on how easy? It is to do this yourself.

Until the next issue, early May as usual please take care, stay safe,

Graham