

Welcome to the very last newsletter of 2019. I would like to take this opportunity to thank you all for your continued subscription to my newsletter and for the comments that you feedback on them.

Hoping 2020 brings good wealth, health and happiness to all of us.

Does Pixel Size Affect Image Quality?

Remember the Pixel count wars that manufacturers waged with each other in the early part of this decade.

Each one proclaiming that more pixels meant higher resolution only to be counter blasted by the others saying that the notion that the higher the pixel density meant smaller pixels the smaller those pixels had to be to fit on the same chip surface area.

It was stated that these smaller pixels had poorer light gathering qualities and a smaller dynamic range.

Is that really the case as now?

Manufacturers like Canon and Sony are packing more pixels onto their full frame and APS-C sensors and pushing them to 32M on APS-C.

Of course image processing has come a long way in the meantime allowing images to be processed very quickly and with better noise reduction algorithms.

As an experiment I compared a 2011 Canon SX220 12M sensor to a 2019 20M sensor in the SX740.



Setting up the cameras to as be exact as one another I made test shots at ISO 100, 800 and 3200.

The resulting JPEG files (no RAW files in camera) are shown below. First ISO 100.



Now at ISO 3200





Shooting at the optimum F4 aperture the results are almost identical at ISO 100. When you switch to a higher ISO it looks like the SX740 with the 20M sensor has cleaner areas of image data in the lighter areas of the image, however in the shadows there is a lot of evidence of some heavy noise reduction with reduced image sharpness. (selective image processing?)



Enlarged crops at ISO 800

Based upon my recommendation when using 1-2/3 inch sensor cameras not to exceed ISO 800 both cameras performed very good at this setting in this test.

The higher pixel count sensor does have the advantage that it will allow a little more cropping to achieve your desired composition or allow you to print larger images.

So that was with the smaller sensor. What about the larger formats like APS-C?

Well Canon have just made a bold move and updated the 90D to a 32M sensor from the previous 24.2M of the Canon 80D. The 80D made the leap from 20M to 24M from the Canon 70D.

So does this pixel density really affect low light performance at the expense of extra resolution. I tested this out using the same settings an lens on the two cameras.



The Canon 80D and 90D camera with 24 and 32M pixel sensors



Canon 80D ISO 3200



Canon 90D ISO 3200



Canon 80D

Canon 90D

Crops from the images at ISO 3200 reveal the amount of data present in the 90D image. So the larger image file does give the advantage of larger prints or cropped compositions.



Once again I was fortunate to be contacted by FeiyuTech to test and review one of their latest gimbals aimed at small mirrorless cameras, the G6Max. My the time this letter reaches you my review should be live on YouTube and the product will be available on Amazon sites from the 10th December. I have no firm pricing yet however it is going to be competitively priced at around £320 in the UK or \$350 in the USA. There may be some launch days deals available.

The basic specifications are as follows:

Load Bearing Capacity: 1.2kg/2.65lb

Weight: 665g (including built-in battery, no camera, mobile phone holder and other carriers)

Battery: Built-in non-removable, 2200mAh, 7.4V, supports direct charging from the Type C port at the handle

Battery Life Time: 9 hours (depends upon motor loading)

Charging Time: About 3 hours (5V/2A)

Waterproof: Anti-splash

The Gimbal Movable Angle:

Pitch Angle: 280° (limited position)

Roll Angle: 330 ° (limited position)

Heading Angle: 360° (infinite position)

Features:

A quick release plate to allow the camera/smartphone/action camera to be easily slid off/on to change batteries or memory cards etc.

Quick to balance and get operational.

Multifunction control dial to provide slow and smooth operation of the heads Pan/Tilt/Roll.

Joystick on handle for motion control

OLED display to indicate various states of the connection etc.

Front trigger button to change modes

Single button to start stop video recording/capture image.

Single button to switch from still image capture to video recording mode.

Increased power motor with adaptive power control.

¼-20 threaded holes for accessories.

Splash proof design.

Supports mobile phones from 54-88mm in height

Supports mirrorless camera with a height <105mm in height.

Supports Sports action cameras like the GoPro Hero 5/6/7/8

Feiyu On app connects via Bluetooth to the Gimbal and the Gimbal connects to the camera via Wi-Fi. If the camera does not support Wi-Fi and has a compatible remote shutter release cable. Sony multi connector and Panasonic 2.5mm cables are supplied with the unit.



The FZ200 and the FZ300/330 balance and operate very smoothly.

The FZ1000 and the FZ10002 are within the quoted 1.2Kg payload but I noticed that the motors struggled when using pitch and roll adjustments – panning didn't seem to be affected. Balance is difficult to achieve if the lens is fully extended and it limits the pitch angle.



Cameras like the GX8 and GX80 performed well with kit lens or pancake lenses.



Shutter release cable used but can be used over Wi-Fi as well.

Action Cameras



This gimbal is the only one to support the new GoPro Hero 8 (as it has a taller form factor than previous versions and it doesn't fit standard gimbal frames.)



The control protocols use Bluetooth to communicate from the smartphone to the gimbal and the gimbal communicates to the camera using 2.4GHz Wi-Fi. A different firmware needs to be installed for the target camera i.e. Panasonic, Canon, Sony and action cameras.

With Panasonic cameras using Wi-Fi (from the FZ300/330 onwards) there is a problem with the camera/gimbal combination when shooting video. The LCD screen will black out after 30 seconds! This is a known issue with any remote app using Wi-Fi. It would appear that Panasonic have built in some “keep alive” pulses in their Lumix image app thus excluding developers from using the Wi-Fi system!

In truth I found it much better to use the camera in the standard video recording mode as the Wi-Fi control offers nothing that you cannot achieve by setting the camera before you start shooting. Connect the camera 2.5mm remote shutter cable via the USB-C port and you have the start/stop video mode or in stills mode you can trigger the shutter. If you have cameras like the TZ travel zooms then you can use the G6Max to add stabilisation to the video clips and you can start/stop the video by pressing the red button on the camera itself.

So basically any camera that can physically fit on the gimbal QR plate and is under the 1.2Kg payload can be used to gather video with enhanced stabilisation afforded by the gimbal. You don't even need to connect via Bluetooth, the gimbal will work standalone. The only advantage of the Bluetooth control is the ability to remotely control the pan/tilt/roll of the gimbal and the fine tuning of the motor controls.

The biggest compatibility and full utilisation of all the functions of the Feiyu On app is to use a smartphone mounted using the smartphone mount. You can then perform time lapse stills, face tracking, object tracking, motion tracking and capture time lapse motion video.



The Panasonic Lumix FZ3003/330 on the FeiyuTech G6Max Gimbal.



The Sony QX10 lens camera interfacing with the Sony Imaging Edge program and switching apps to control the G6Max gimbal.

Many cameras will not connect via Wi-Fi to the G6Max Gimbal but nevertheless they can still be used with a little bit of lateral thinking. I used the Sony QX10 lens camera with my smartphone switching apps from the Feiyu On app to the Sony Imaging Edge program. It gives the benefit of stabilising the camera whilst using the smartphone as a live view of what's being recorded. You can of course change the settings and zoom of the QX10 through the Sony Imaging Edge app and start stop video recording. My Youtube review for this gimbal https://www.youtube.com/watch?v=xwkEawkp_Uk

The FeiyuTech W2GX 3 Axis Gimbal



I recently purchased the FeiyuTech W2GX wearable 3 axis gimbal so that I could use this to capture “B” roll footage for my YouTube videos.

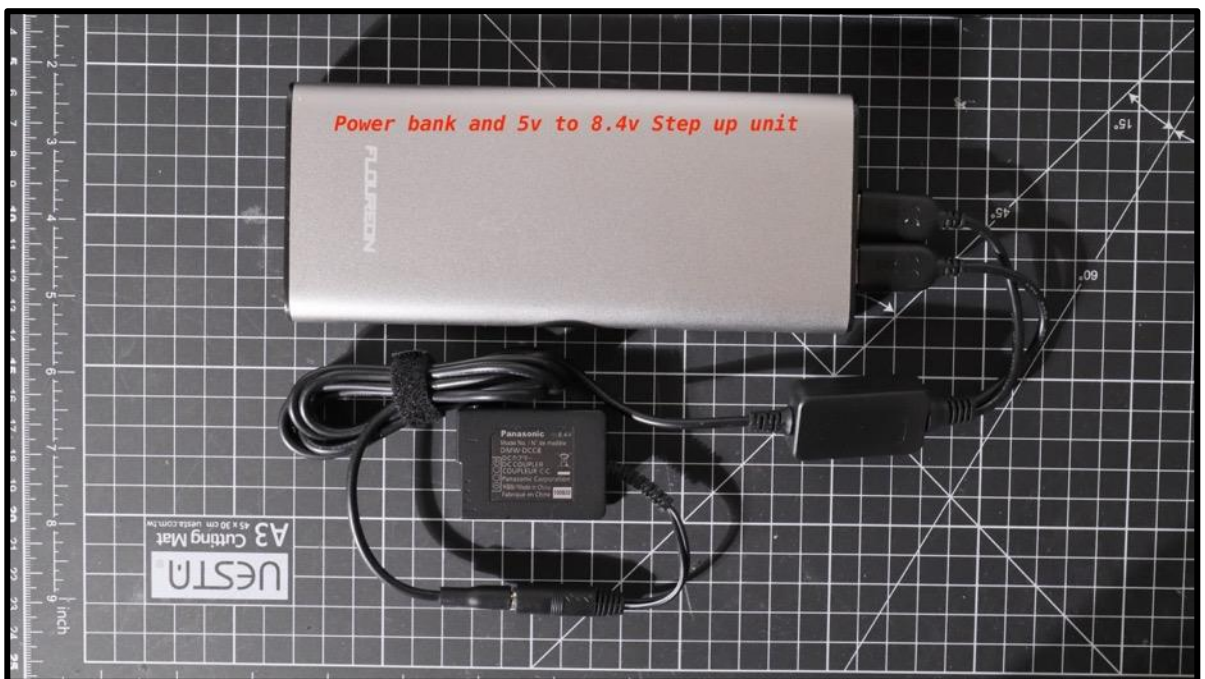
It’s mainly geared towards the GoPro action cameras (not the Hero 8 as it won’t fit the frame) but I wanted to use this with my DJI Osmo action camera.

The Feiyu On app doesn’t support the Wi-Fi interface of the DJI camera but again with a little out of the box thinking it is easy to use the DJI Mimo app to control the Osmo Camera and use the Feiyu On app to remotely control the gimbal. (use the app switching facility of your smartphone or if you have a second smartphone you could have the interface open on each smartphone.

It has a few limitations but nothing that will impede my use with it.

Watch out for my review and use in the next couple of videos.

The Dangers of Using Power Banks and USB to 8.4v Power Adaptors for Cameras



We have probably used, or considered using, a USB Power bank and one of the many USB to 8.4 volt adaptor units.

I know to my costly experience that this might be a very elegant solution but it carries a hidden danger that I hadn’t even considered!

The internal power supply circuits of the Panasonic (and other cameras) monitor the voltage of the battery (in this case it is replaced by the convertor and a dummy battery) and when the terminal voltage of the battery starts to fall we get an indication of the battery charge status on the LCD screen (provided that the dummy battery box has been modified to display it!) when the terminal voltage falls to about 6.4v the camera gracefully closes any recording sessions and then powers down the camera.

Thus if you are doing an extended video shoot and this happens, the file is actually closed for you and so there is no danger of having a corrupted file.

Now what happens with a USB power bank and step up convertor.

The little converters function is to always boost the input from the nominal USB voltage of 5v to out 8.4v needed by the camera.

Internally the power bank has over discharge protection circuits and their function is to disconnect the output when the lithium ion battery voltage drops to around 3.2v.

This is instant and provides no indication that it is about to happen.

When it does the camera just loses its power and any open file is left open with the possibility that it might be corrupted.

In a worse case scenario (and it happened to me) the power bank actually recovered from the 3.2volt cut off point and started to output 5v again.

This was boosted to 8.4 and the camera came back on (as the power switch was still in the on position) as soon as the camera started to pull load the power bank immediately shut down again.

A few moments alter it recovered and the whole process started over again until the point where the camera was powering up and down as fast as the power bank recovered and shut down again.

The result was my FZ1000 was destroyed as the power supply spiked and damaged all the pcb's and the lens OIS. It was over £350 to repair it!

So I started to look at an alternative way to power the camera using external lithium ion batteries and a dummy battery box which I had modified to allow the camera to display the battery charge state.

The official Panasonic DC coupler is a total joke! It does not even provide this signal to the camera as I guess it was intended to be used on a mains power supply not an external battery.



By using a protected lithium ion cycle headlamp battery which is 8.4v and 13000mAh gives over 6 times the run time of a fully charged and new BLC12 battery.
As the battery terminal voltage falls to around 6.25volts the camera shuts down gracefully as if it was using its own internally fitted battery.



By modifying the dummy battery box to provide the on-screen display of the charge status you can keep an eye on this.

At 75% the cell voltage is 7.3v

At 50% the cell voltage is 6.90v

At 25% the cell voltage is 6.50v

Begins to flash red at 6.40v

Shutdown at 6.25v

The headlamp battery box I chose has a mains powered charger supplied with it.

I have 5 units now that regularly power my FZ series cameras and my Canon EOS M cameras and I have had no problems at all.

I have a number of the official Panasonic BLC12 dummy battery boxes that I have modified to provide the on-screen charge status.

I am going to offer the connection cables to adapt the headlamp battery to the Panasonic dummy battery and will put them on my store page of my blog.

I'm waiting for some more plugs to arrive to finish off making the cables up.

I cannot ship the headlamp batteries as they require transport/airline approval but I'll provide the Amazon links so you can get them yourself.

The cost of the official Panasonic dummy battery box (converted) and the adaptor lead will be £12 plus postal charges.

Photographing Seasonal Decorations

If you celebrate Christmas then one of the festive activities is to decorate the Christmas tree with lights and decorations.

These make tempting photographs but can often lead to some disappointed results.

Here I'll try to give you some hints and tips to capture your Christmas lights.



In Total darkness with only illumination from the LED lights on the tree exposure 13 seconds, F18 @ ISO 200

Using the APS-C Canon 90D I wanted the starburst effect from using a small aperture so the image was captured in manual mode on a tripod using a 2 second timer.

The background is a combination of all the hues from the lights on the tree. If you try to include the ambient light in the room the exposure will be shortened and the tree lights will lose their saturation.



If you focus on a single decoration you can use the room ambient to add the lighting to sculpture the shape.



Here I chose to use the ambient lights to capture the whole of this display



In contrast this shot was taken with the ambient lights off with only the Christmas tree lights on

It's a matter of personal preference but the shot with the room light on paints more light to reveal the form and structure of the display and doesn't take on the hot spots of light from each of the lights in the garland.



Again focussing in a single element to simplify the composition and eliminate a lot of other distracting visual elements in the image.

Shooting with an aperture of around F4 to F5.6 on bridge cameras will give sufficient DOF for these close up shots. Use a tripod as the exposures may be longer than 1/30 second.

So I guess if you want to capture some outdoor Christmas light shows it is best to capture these during “blue hour” (up to an hour after sunset) so there is still a trace of daylight and this helps to establish the ambience of the scene. Often if you shoot in total darkness the results are less than spectacular.



Don't forget to try some out of focus shots for backgrounds etc.

Selecting Aperture/Shutter Speed with Canon EOS M Series Cameras in P Mode

There are occasions when letting the camera decide the exposure can be beneficial as it allows you to concentrate on composition or waiting for a specific point in a sequence which may have some action – such as sports or family parties etc.

With a lot of our cameras now supporting Auto ISO as well as manual settings for ISO you can set an upper limit that you want the camera to use.

If the light level is very low the camera will automatically be using the lowest aperture. Under normal lighting in the P mode the camera will select an Aperture/Shutter speed combination that is usually biased towards the minimum (widest) aperture.

You may find that this is adequate especially if using the normal 15-45mm kit lens as it gives sufficient depth of field at this combination.

However if you want a smaller aperture, to gain more depth of field, then you can force the camera to a different Aperture/Shutter speed combination by the following method.

When you half depress the shutter button you will see the current combination of aperture and shutter speed. Here you can see that it is 1/60sec, F3.5 with ISO 1600



Whilst the screen is showing this combination if you rotate the ring around the shutter button (counter clockwise to increase the F-stop value) you can adjust the combination pair to give you the aperture (or shutter speed if you are shooting sports and want to select a faster aperture [if the light level allows])





Here you can see that I selected F8 to give me the depth of field that I needed for this particular image.

Just another way of shooting and understanding the possibilities that this camera can offer.

So that's all for 2019.

I'm hoping 2020 will be a more productive year as I missed achieving a lot of the goals that I had set myself. Maybe I was over ambitious!

So once again thank you for all you support by using the Amazon links it doesn't amount to a lot of revenue but does allow me to purchase smaller products for review etc.

Have a great Christmas, if you celebrate it, use the time to get out your cameras and capture some fantastic images.

I hope to greet you all in January 2020 and continue bringing you a variety of topics to increase your knowledge and help you to enjoy your hobby.

Graham