

Camera Selection for the X-mount

This article is a discussion of the advantages and disadvantages of the various camera that can be used on the Xmount.

Nikon

Coolpix 950 - discontinued

A 2.1 megapixel camera. Maximum ISO of 400. Articulated body, which allows for viewing of the LCD. Has a reputation for good image quality. Its main disadvantage is the low pixel density which may not be a problem depending on final use of the image. A remote release is mandatory for good microscope photography but there is no Nikon remote release for this camera. There are however a number of aftermarket mechanical releases available. Discontinued. If you own one use it, but if you are buying new camera get a higher pixel count camera with a remote.

Coolpix 990 - discontinued but available reconditioned

A 3.2 megapixel camera. Maximum ISO of 400. Articulated body, which allows for viewing of the LCD. Adequate ISO and pixel depth. Uses Nikon MC-EU1 remote release. Discontinued but still available reconditioned on Nikons website. A good camera for clinical images and a good value. It produces a somewhat flat image that is easily corrected in Photoshop

Coolpix 995

A 3.2 megapixel camera. It has a broader zoom range (4X vs 3X) than the 990. All of the Coolpix cameras except this one must be used at their maximum telephoto setting to prevent vignetting, with the 995 there is a range of telephoto settings that can be used. This allows for some adjustment in the relationship of the objective view and the camera view. It has a higher maximum shutter speed than the 990 and a maximum ISO of 800 with its subsequent image noise. Articulated body, which allows for viewing of the LCD while seated. Has improved image controls for saturation, contrast and sharpening. Its main advantages are the higher ISO and improved image controls. Uses Nikon MC-EU1 remote release. This is the highest recommended camera for a new buyer if the camera will only be used on a scope.

Coolpix 775

While this camera can be adapted to a scope it is not recommended due to its lower pixel depth, lack of manual controls and lack of a remote.

Coolpix 880 - discontinued

A 3.2 megapixel camera Very small and light. Electronically and functional similar to 990 except that body does not articulate so the LCD cannot be seen when seated. Uses Nikon MC-EU1 remote release. This would be an ideal camera for use with an external monitor. Requires a Nikon UR-E4 step down ring to use with Coolpix auxiliary lens and the X-mount.

Coolpix 885

A 3.2 megapixel camera. Similar to the 880 but has a broader zoom range and is even smaller and lighter. Does not have a true aperture priority mode but this can be compensated for by adjusting the program settings. Body does not articulate so LCD cannot be seen when seated. Uses Nikon MC-EU1 remote release. This would be an ideal camera for use with an external monitor. Requires a Nikon UR-E4 step down ring to use with Coolpix auxiliary lens and the X-mount. This and the 880 make terrific vacation cameras!

Coolpix 5000

Nikon newest Coolpix. A 5.0 megapixel camera. Looks like an 880 only slightly bigger. LCD is articulated so it can be seen when seated. Has the same sophisticated image controls as the 995. Maximum ISO is 800 and with its subsequent noise problem. Uses Nikon MC-EU1 remote release. UR-E4 step down ring is required for Coolpix accessory lens and X-mount. More memory intensive due to high pixel count. This camera presents some compromises for microscope use. The lens is slower than the lens on the 995 and subsequently gives somewhat slower shutter speeds. Also the maximum telephoto setting is not quite sufficient to prevent vignetting. So to eliminate vignetting, the digital zoom must be used slightly (set at 1.2x the optical zoom). This reduces the pixel count to about the level of a 4 mega pixel camera. Neither of these problems is insurmountable. It has a hot shoe that accepts the whole range of Nikon strobes. This is a high quality, sophisticate camera for general use that can be used successfully on a microscope. Worth looking at if the scope camera will be used for general use as well as microscope use.

General Coolpix Features

All these Nikons have sophisticated electronics that allow for setups with custom white balance and image compensation. See the camera setup articles for specific recommendations. They all have an interesting setting called **BSS** or Best Shot Selector. As long as the shutter release button is held down the camera continues to take pictures until the memory buffer is filled up. It will take up to 10 images and take up to 6 seconds to do it. It then selects the image with the least movement and saves it, which also takes a few more seconds. The time delay is not ideal but workable. This feature does seem to work and is a nice adjunct since vibration is such a problem with microscope photography.

All these cameras, with the exception of the 950, use the Nikon MC-EU1 remote control. This is not an ideal remote as it is expensive (\$100) and somewhat complicated as well as being wired. However it is usable and is the only choice at this time

Olympus C series – 2000/2020/3000/3020/3040/4040

A confusing number of cameras to select from but there is some reason to the numbering system. The first two number indicate the pixel depth of the camera, ie;

20xx = 2.1 megapixels,

30xx = 3.2 megapixels and

40xx = 4.1 megapixels.

The last two numbers indicate the lens type. Cameras with an
xx00 and xx20 number = 6.5mm-19.5mm f2.8 lens where as the
xx40 = 7.1mm-21.3mm f 1.8 lens

The difference between the xx00 and xx20 cameras is in the size of the internal buffer. Some type of external monitor is recommended since they all have fixed LCD's that cannot be seen when seated at the microscope. All have a maximum sensitivity of ISA 400. They all use the Olympus RM-1 remote, which is a small, simple wireless unit. Unfortunately the remote is hooked into the exposure delay circuit so there is a 3 second delay from the time the button is pushed and the exposure is made. This is a workable but frustrating feature. All require an Olympus lens adapter tube CLA-1 to use accessory lens and adapt to the X-mount. Olympus has a very nice macro attachment for these cameras. This series are similar in size and layout to the Nikon 880. The 3040 and 4040 are recommended because of their somewhat longer maximum telephoto settings. These lens are about one stop faster than a Nikon Coolpix so they can give higher shutter speeds.

Sony PC100, PC110 & PC120BT – PC100 and PC120 are discontinued

The PC100, PC110 and PC120BT are similar with only minor differences that are not relevant to microscope needs. The 120BT is the latest model. They are typical small digital video cameras with one important difference. They have a high-resolution still mode. This allow for the taking of digital video and reasonable quality still photographs with the same camera. The still mode in the PC100 and PC110 gives a 1360 x 1200 pixel image, which is only slightly smaller than what a 2.1 mega pixel still camera gives. While this is not as high of resolution as the best digital still camera it is still high enough for small pictures in case reports and many lecture images. The 120BT is even higher resolution, being a 1.5 megapixel camera.

The video mode is digital with all the advantages for editing that brings with it. They also have monitoring capability over a computer as well as the higher quality S video out rather than NTSC.

The LCD screen is articulated for viewing. The white balance and image controls are less sophisticated than in the good digital still cameras but are close enough for most uses and post processing in Photoshop will give very nice images. This is a good camera for those mainly interested in video but wanting reasonable still images. Not quite the best of both world but close.

Canon G2

Notes on the G2 will be added as soon as I have tested the camera. I received a prototype mount recently and so far things look good. This is the only prosumer camera that allows for true remote control and capture directly to a computer. The interchangeable lens D30 and D60 are highly regarded digital camera and many of their features are included in the G2.