

Setting Recommendation for A620/A610

These setting will work for the A95, A510, A520, A530 and A540

Recommended settings

SHOOTING MODE APERTURE PRIORITY

Set the camera to the lowest f -number possible. A wide aperture (low f -number) lets the most light into the camera and produces the highest shutter speed. Higher shutter speeds reduce the effect of vibration.

ZOOM

MID-RANGE

Set the zoom range to eliminate vignetting in the corners without using too much zoom. The relationship between the camera view and the objective view can be changed somewhat by adjusting the zoom.

FLASH

OFF

The light source for the scope is the light source for the camera. You do not want the camera flash to influence the image.

FOCUS

MANUAL SET AT INFINITY

The design of the photo mount assumes the camera is focused at infinity so the auto focus needs to be disabled and the manual focus set to infinity. If the scope is carefully par-focused, the scope and camera will focus on the same plane. (see article on par-focusing) You can use either the scope or a monitor to determine focus while taking pictures. The scope is more accurate but has the disadvantage of not being able to see the framing. Using any type of auto focus will create a situation where the focus will be unpredictable.

ISO

400

The higher the sensitivity, the higher the shutter speed. Since vibration is a big problem with microscope photography, a high shutter speed is desired. Increasing the sensitivity adds a bit of noise to the image but this degrades the image far less than vibration.

WHITE BALANCE CUSTOM (see White Balance article)

Using preset white balance sets the camera to a custom setting that compensates for the light source on the scope as well as any influence of the various lenses in the scope have on the color balance. It also ignores any influence of an odd colored subject matter. The result will be the most accurate and consistence colors to the images. The target used to set the white balance should be a Kodak Grey Card or a very white matte paper like that use for high quality ink jet prints

PHOTO EFFECT OFF

Photo effect changes the way the camera computer processes the information coming off the CCD. OFF will give the most accurate color and saturation and is the recommended start setting. VIVID will increase the contrast and color saturation and give results similar to slide film. It requires somewhat more accurate exposure. These effects can be introduced when post processing the image.

METERING Evaluative or Center Weighted Average

Generally Evaluative will give the best results

COMPRESSION Fine

This setting seems to give the best balance between image file size and quality. **Superfine** will produce a marginally better image but with some increase in file size. The improvement will probably not be noticeable in normal use.

RESOLUTION Large

Resolution should always be at the highest. Resolution can always be reduced later and currently storage is fast and large enough to not be problem

EXPOSURE

COMPENSATION This is the main adjustor of exposure. This adjustment compensates for inaccuracies in the exposure. Many dental images tend to be dark because the subject matter is light and the meter tends to overcompensate resulting in a dark image. Adjusting the exposure compensation will help get more accurate images. A setting of +0.7 or +1.0 will nicely compensate for this tendency. However, I would start with the standard setting and only apply this correction if the overall trend of the images is too dark. You may have to use a different compensation setting for surgery than for conventional endo. The color of the rubber dam can have an effect on exposure, especially if it is a light color. Usually the best setting is judged visually but a more sophisticated method is to use the histogram in the camera or in Photoshop. (see Histogram article)

CONTINUOUS SHOOTING ON

If set to ON the camera will continue to shoot images at 2 frames per second until the shutter is released. The main advantage in microscope photography is it allows the operator to “bracket” the focus. In critical situations holding the shutter release down and moving the scope in and out slightly will help guarantee at least one image will be in proper focus. The unused images can be thrown away later.

DIGITAL ZOOM OFF

The digital zoom increases the range of the zoom by using less of the pixels in the image to give the appearance of higher magnification. Unfortunately this degrades the image because less pixels make up the image. High magnification is not needed for our purposes. It is better to crop an image in Photoshop than use a digital zoom to create tight framing. The zoom is adjusted by zooming to telephoto until the vignetting just disappears.

AUTO POWER DOWN DEPENDS ON POWER SOURCE

This setting turns the camera off to conserve battery power after three minutes if no actions are performed. With the camera in sleep mode the power consumption is minimal. Unfortunately it takes a few seconds for the camera to turn itself back on when the shutter button is depressed, so there is a delay before an image can be taken. This delay can be frustrating. Turning this setting OFF keeps the camera on and ready the whole time but at the expense of shortened battery life. Rechargeable batteries are a must and extras should be available. A set of NiMH batteries are good for about 1500 images, but if the camera is left on it will drain the batteries overnight. Regardless of the setting the LCD screen will power down after one minute but it turns back on with no time delay. If the camera is powered by an AC adapter the camera will remain on during the whole procedure and eliminate the time delay of the camera booting up but an extra cable is required.

SOUND ON

In the sound-on mode the camera beeps when an exposure is made. This is a nice indicator that an exposure is made since the camera is quiet otherwise.

Mode C

Previously used settings can be saved and accessed through the C setting on the mode dial. Once the camera is set up, go to the (Rec) Menu > select Save Settings > select OK > press the Function Set button. This is very handy since the camera will return to all the previous settings.

MOVIE

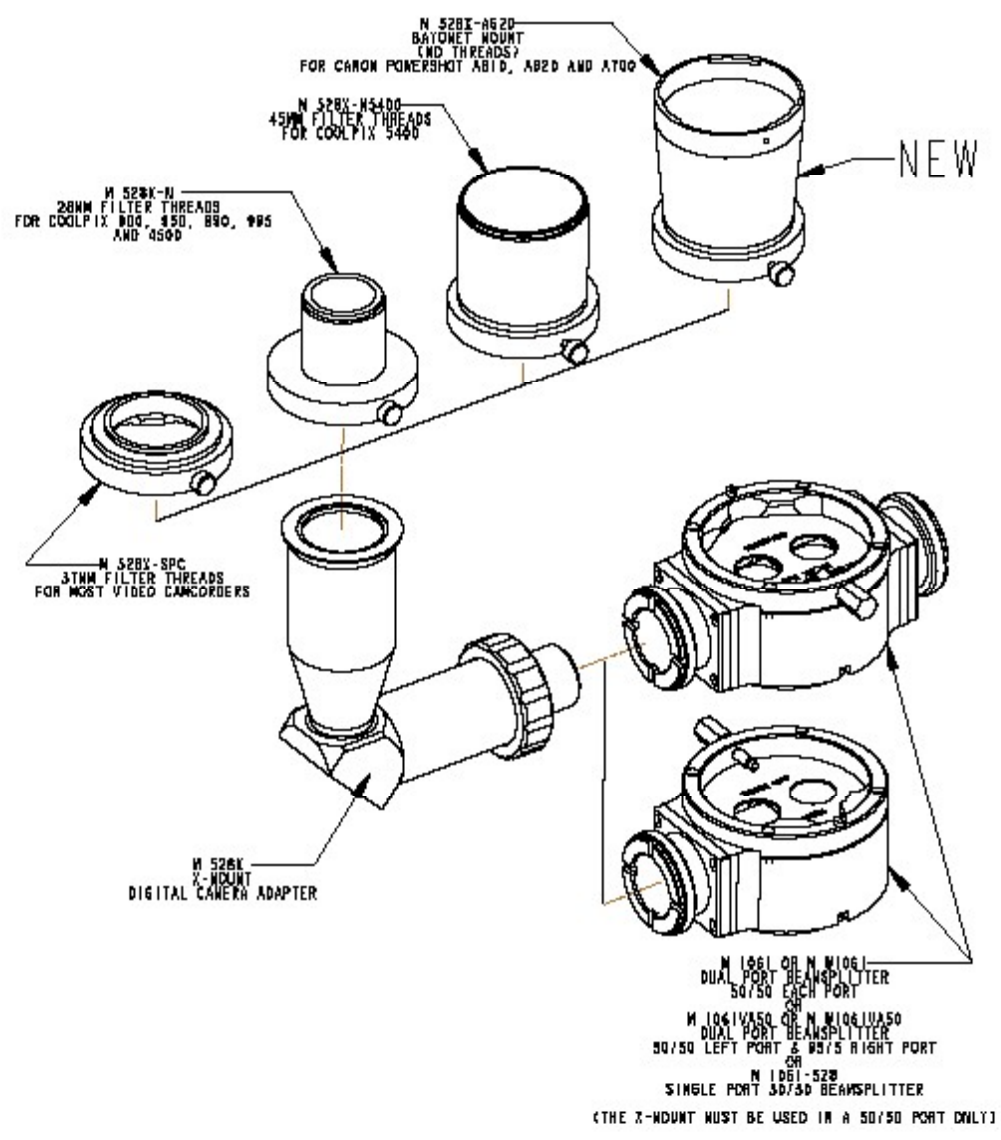
Standard (640x480) at 30 fps frame rate

While primarily a still image camera the movie mode can be quite useful for documenting short motion captures. The 640x480 size projects well in a presentation and is a good adjunct where motion is required to show a point. This requires a high capacity, high speed memory card to function adequately.

REMOTE CAPTURE

This is one of the few prosumer cameras with an adequate remote capture capacity. Using the included Remote Shooting software, the camera can be set and controlled through a computer. It can be set to bypass the camera memory card and record the images directly to a pre-selected file on the computer hard drive. In addition there is an additional window showing the live image off the LCD. The disadvantages are the additional cable required from the camera and an additional person to release the shutter. The maximum length of a USB cable is 15 feet. This can be extended with an Active Extension Cable Repeater. The aftermarket software, PSRemote from Breeze is a good alternative to the Canon software and allows for a larger window, as well as displaying the histogram on preview.

M 528X X-MOUNT DIGITAL CAMERA ADAPTER



FOR DIGITAL CAMERAS AND VIDEO CAMERAS
 (SOME DIGITAL CAMERAS REQUIRE ADDITIONAL
 ADAPTERS NOT SOLD BY GLOBAL
 SEE X-MOUNT CAMERA LIST FOR MORE INFORMATION)

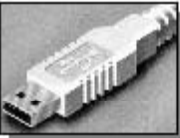

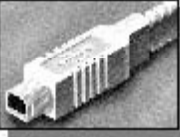



Series "A" Connectors	Series "B" Connectors
<p>◆ Series "A" plugs are always oriented upstream towards the <i>Host System</i></p>  <p>"A" Plugs (From the USB Device)</p> <p>"A" Receptacles (Downstream Output from the USB Host or Hub)</p> 	<p>◆ Series "B" plugs are always oriented downstream towards the USB Device</p>  <p>"B" Plugs (From the Host System)</p> <p>"B" Receptacles (Upstream Input to the USB Device or Hub)</p> 
	<p>Series "mini-B" Connectors</p> <p>◆ Series "mini-B" plugs are always oriented downstream towards the USB Device</p>  <p>"mini-B" Plugs (From the Host System)</p> <p>"mini-B" Receptacles (Upstream Input to the USB Device or Hub)</p> 

Figure 6-1. Keyed Connector Protocol