## Setting Up the USB 3.0 Camera

This document will go through all of the steps necessary to get the USB 3.0 camera operational. It will go through the installation of the camera driver and utility software. It will also cover calibrating the camera and setting the white balance.

Software Installation

Insert the camera driver CD and run the appropriate installation for your version of Windows, x86 (Windows 32bit) or x64 (Windows 64bit).
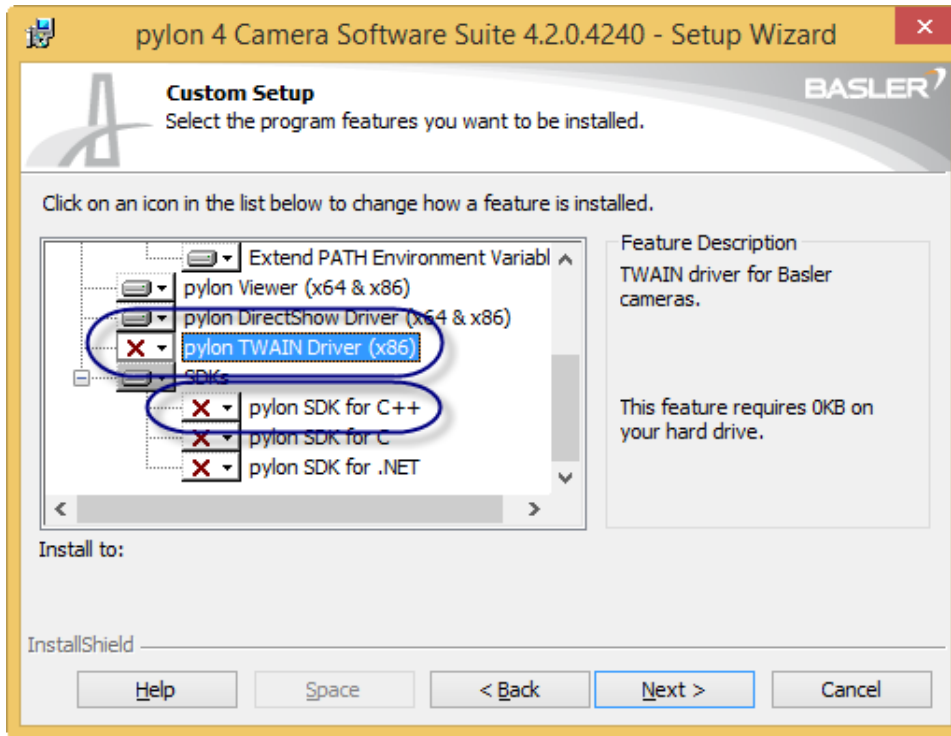
The Basler Python Installation will start.
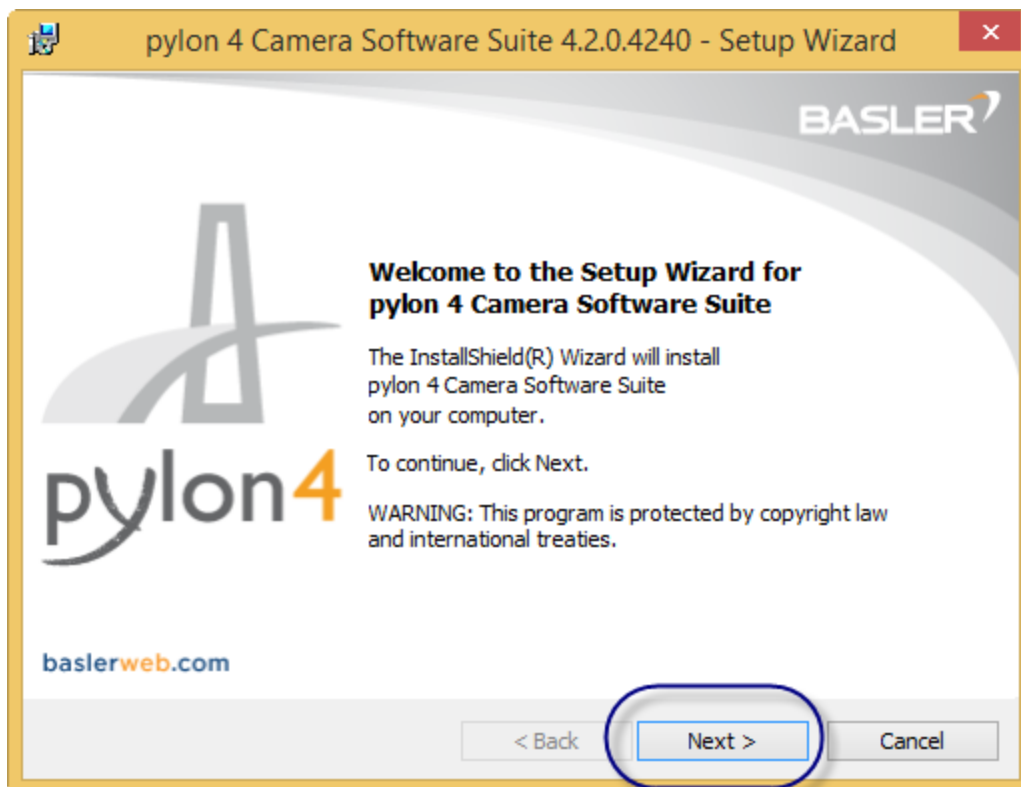
Disable the installation of the GigE, IEEE 1394 and Camera Link drivers by clicking the selector for each line and disabling the feature. Repeat this for the rest of the highlighted entries.
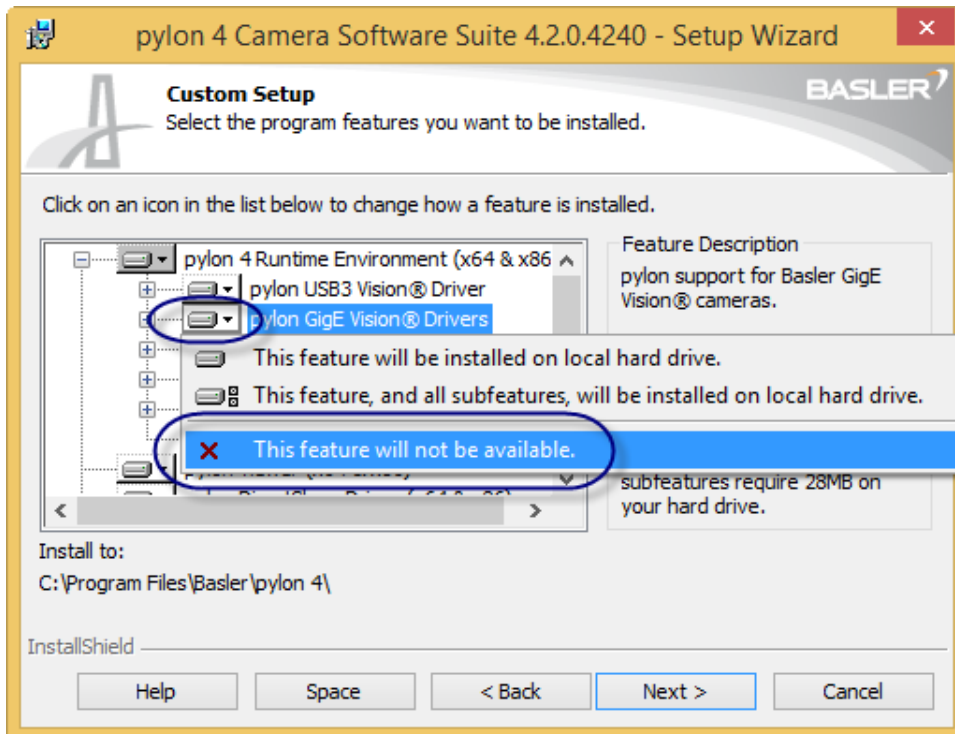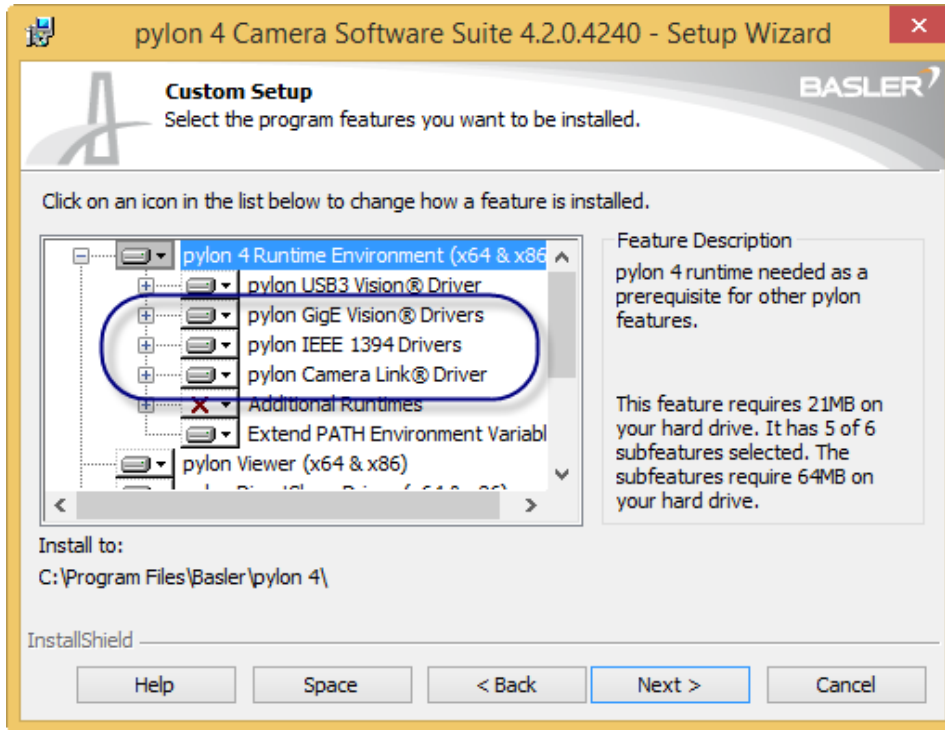
You can also disable the Pylon TWAIN driver and Pylon SDK for C++ as well.

Click the Next button and click through the rest of the screens to finish the installation.

When finished, there will be two new Shortcuts created on the Desktop, the Pylon USB Configurator and the Pylon Viewer.

Plug in the Camera

Now that the software and drivers are installed, you can now plug in the USB 3.0 camera.

Windows will now start the process of installing the drivers for the camera to connect to the computer. If all went well then you will have the camera installed and almost ready to use.
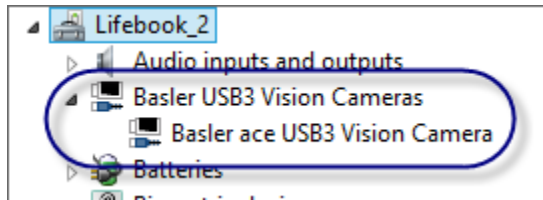
At this point, **<reboot>** the computer.

Note: If the camera did not automatically install or you received any sort of error message, call our office for technical support, 310-802-6300, 9:00am to 5pm, PST.

To begin troubleshooting the issue on your own, run the Pylon USB Configurator, a shortcut is on your desktop. It will show all of your USB ports defined in and the specific USB Hub and Port. This will allow you to verify that the camera is plugged into a supported USB 3.0 port. The camera will have an "information" icon associated with it, when the configurator program cannot properly communicate with the camera. If the USB Hub and Port that the camera is plugged into is not USB 3.0, try a different USB port on your computer. USB 3.0 ports usually have a light blue plastic center or are externally labeled as a Super Speed port. If you are plugged into a USB 3.0 port and it still does not work, there might be a compatibility issue with your specific port or cable. If you are using an active repeater cable, try using the USB cable we shipped with the unit.
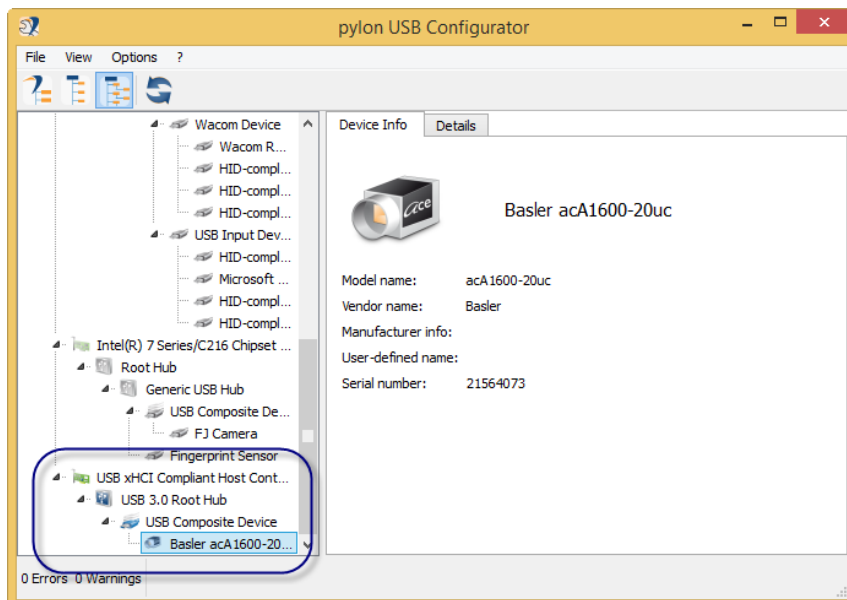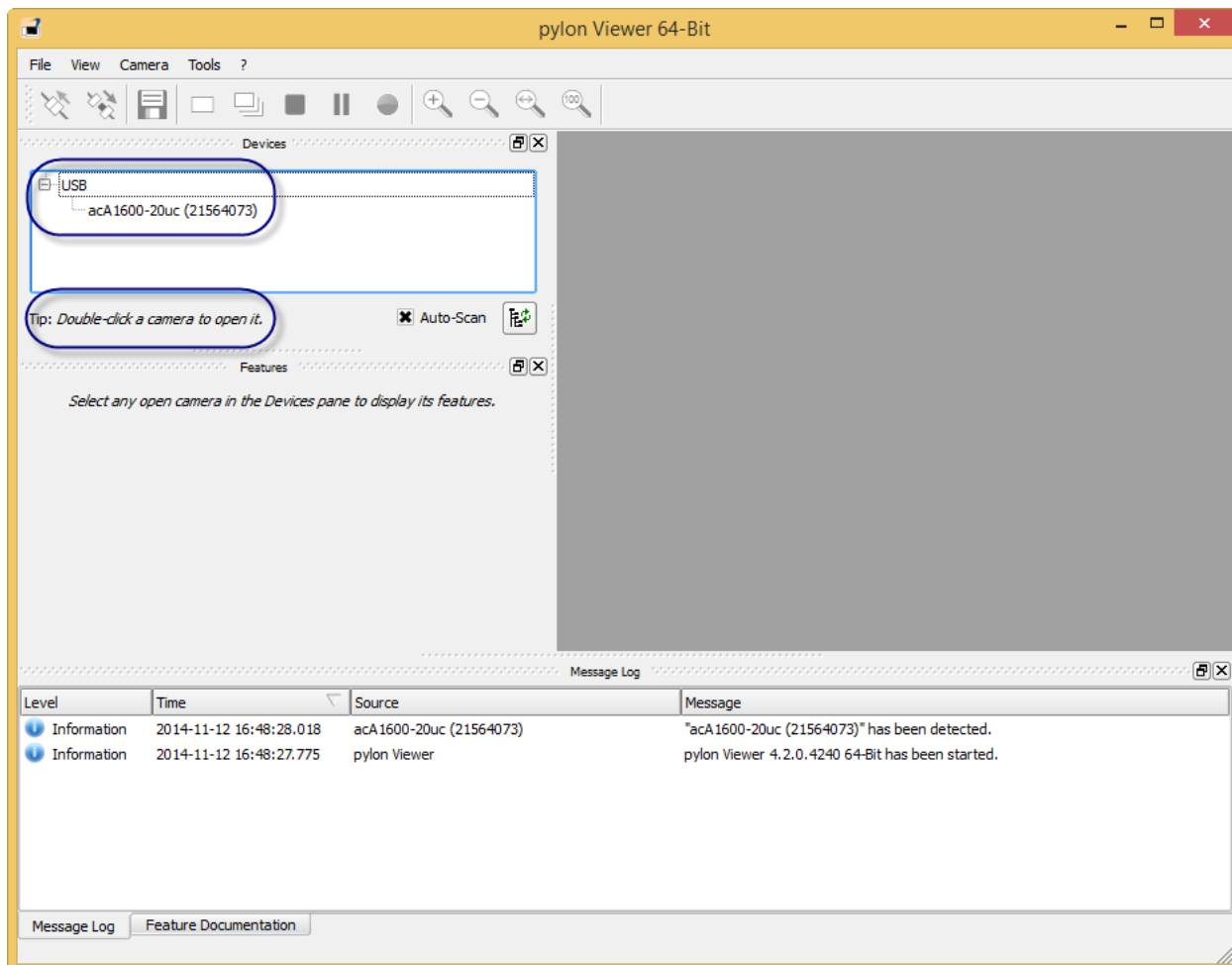
Calibrating the Camera

The easiest way to calibrate the camera the very first time is to run the Pylon Viewer software. A shortcut was created during the installation of the software.

Once the software is running, double click the installed camera.

Note: To get the best results when calibrating the camera, make sure you are doing the calibration in the same environment and lighting that you will be using the camera in. It is also a good idea to focus on some white gauze or cotton balls. You will also need a white piece of paper as well as some item of color.

Once the camera is activated, the Features window will activate.
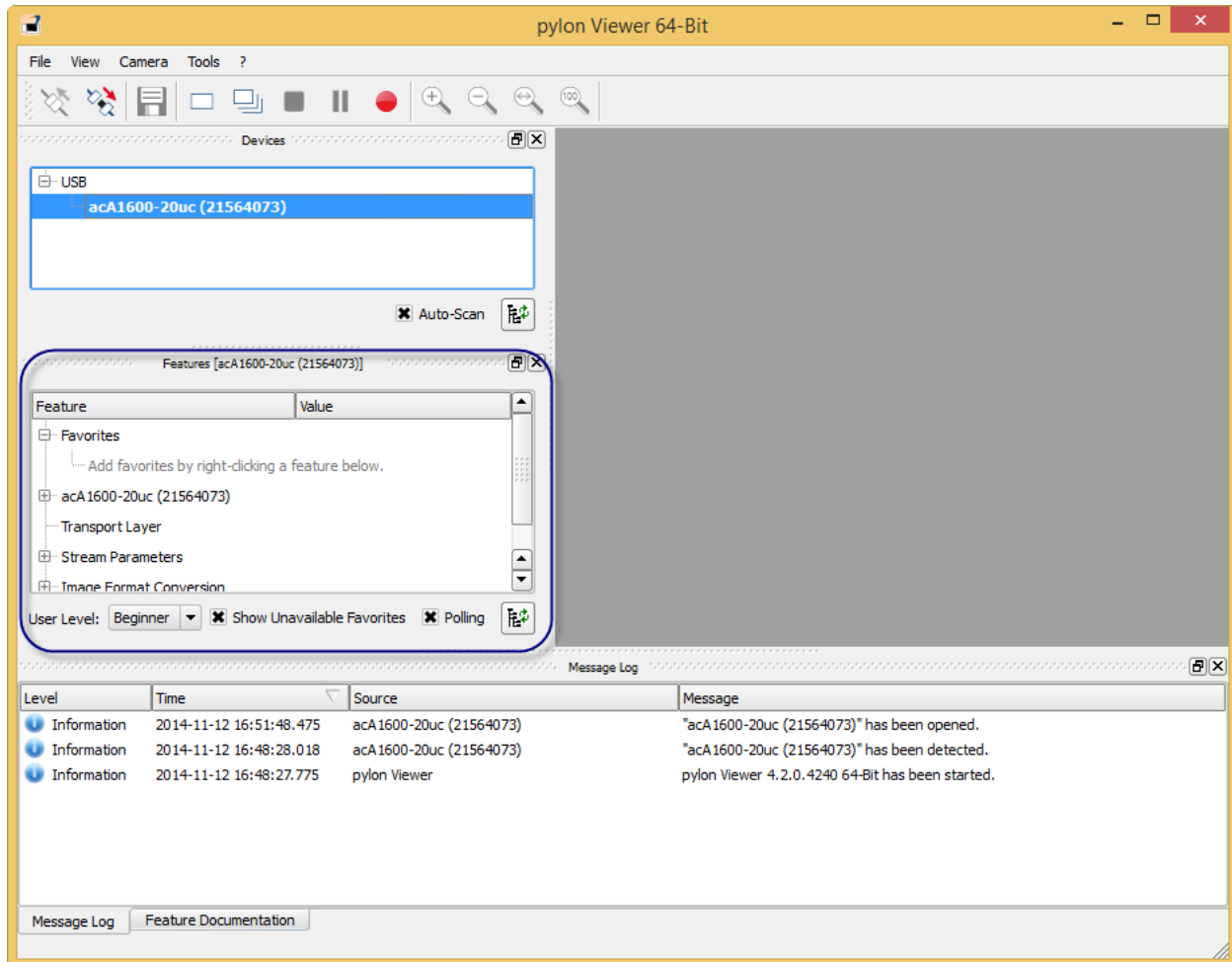
For the most part, unless you are an experienced user, do not go through the various features and change the settings. During the calibration process, there are only a few settings we will be changing. If you do start changing settings and get stuck, there are choices to re-load various default values.

The two main items we will be calibrating are the light settings (brightness / contrast) and the white balance (color). With most digital devices, in order to get good color, the device needs to know or be taught, what is white. Once it knows white, it will adjust the colors on its own. As you will see, you can adjust the different specific color values but in most cases it is not necessary.

To get started, click the + next to the camera to open its features.

Note: You can resize each section of the application as well as hide the section you don't need such as the Message Log.

Now that the Camera is active, click on the Continuous Shot button, click on Zoom to Fit, and in the camera features section, expand Acquisition Control feature.
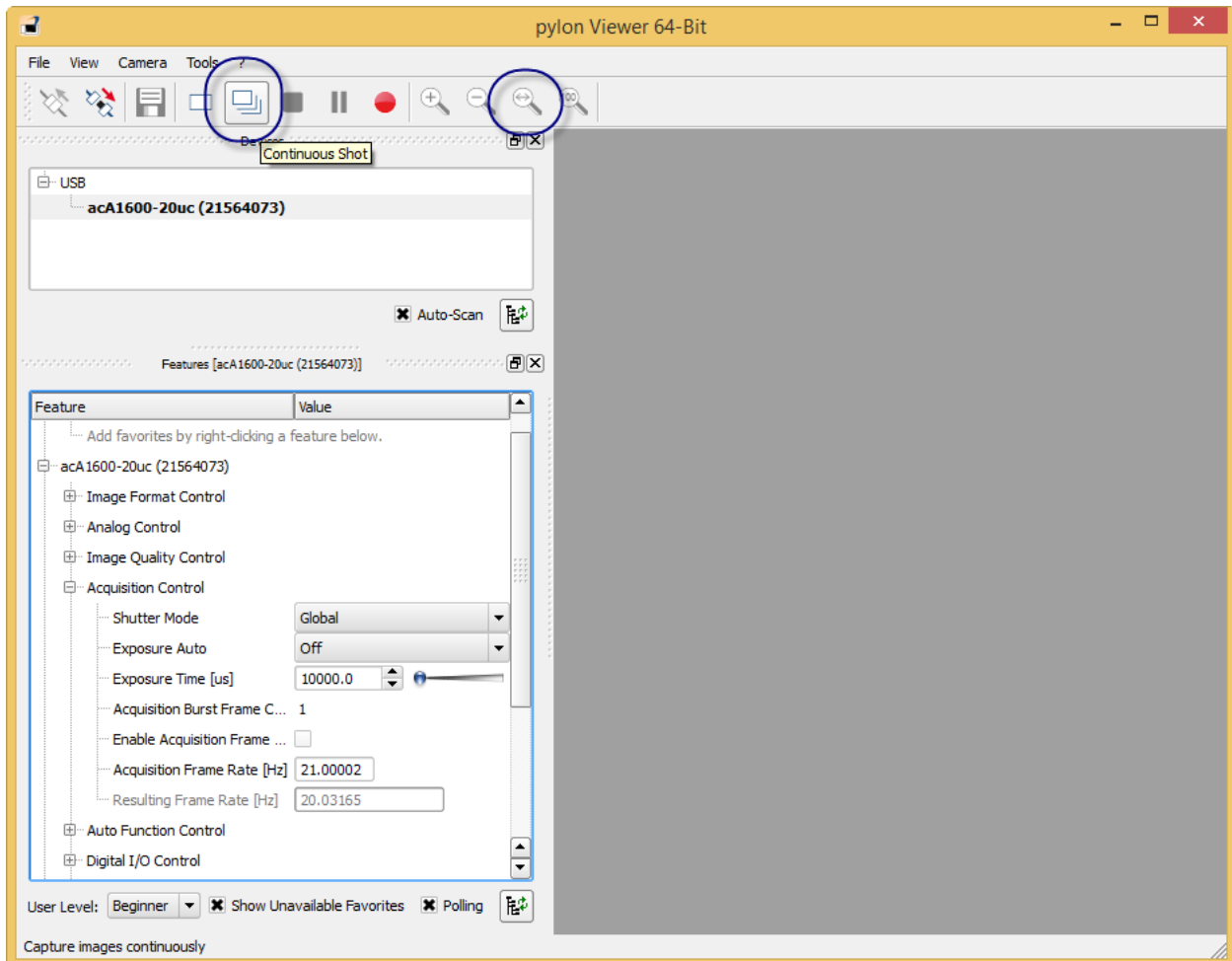

Setting Brightness

In the Acquisition Control feature, there is a setting called Exposure Time. This is the key setting to control the cameras brightness. This setting is telling the camera, how long the camera sensor be exposed to the light before it captures a frame of video. The higher the number, the longer the virtual shutter will stay open, the smaller the number, the lower the time interval.

To start with, look at the brightness of the image. If you are happy with the brightness, then you are done. If it is too dark, increase the value until the correct brightness is achieved. If the image is too bright, decrease the number until the correct brightness is achieved.
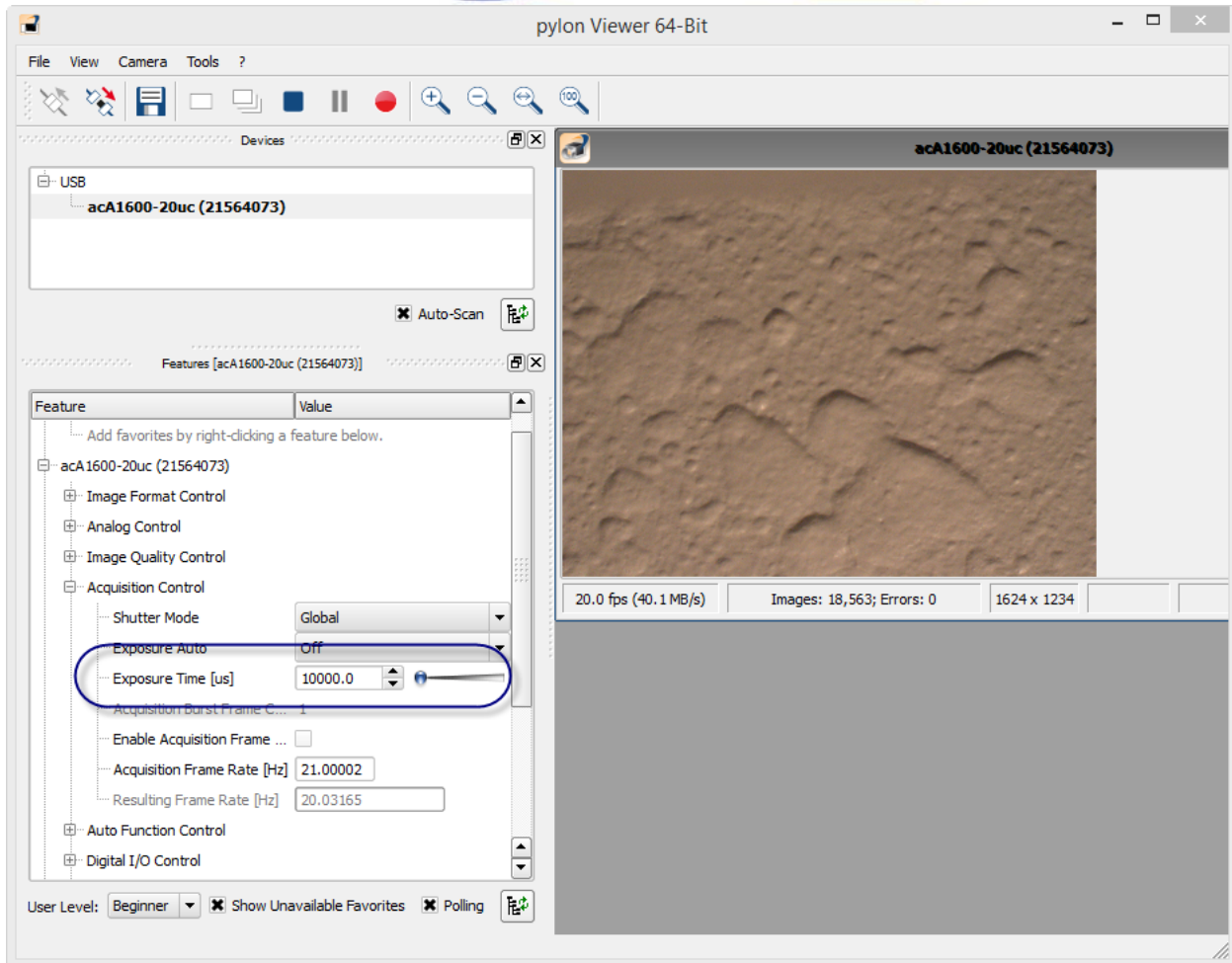
Note: If you increase the Exposure time to the maximum value and it is still not bright enough or you decrease the value to the minimum value and it is still too bright, adjusting the Gain value in the Analog Control feature will help. Think of the gain values as the gross value and the time value as fine tuning.

Note: The other approach is to get the gain value to 0, then adjust the exposure time value.
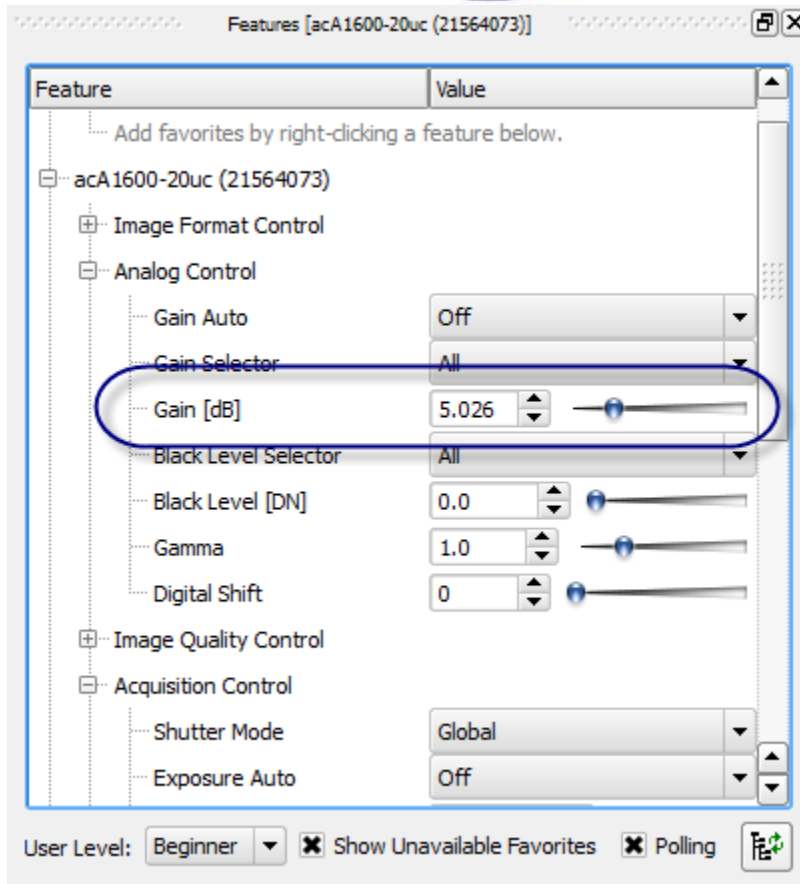
Setting White Balance

Focus the camera on an object that is pure white. Make sure that the entire field of view is white. For example, hold up a white piece of paper, where all you see is white.

Now go to the Image Quality Control section, expand the Balance White Auto section and click Once. This will perform the white balance operation once. This procedure can be repeated often. Each time you feel the colors are off or if the lighting or environment changes, perform a white balance.

Note: If the camera image is already white when looking at it, then performing a white balance will only make miner adjustments if necessary. If the white object looks yellow or gray, then the camera is in need of a white balance.

Note: If you have special lighting in your environment or know the specific color temperature of the lighting, you can try changing the Light Source Preset to match.
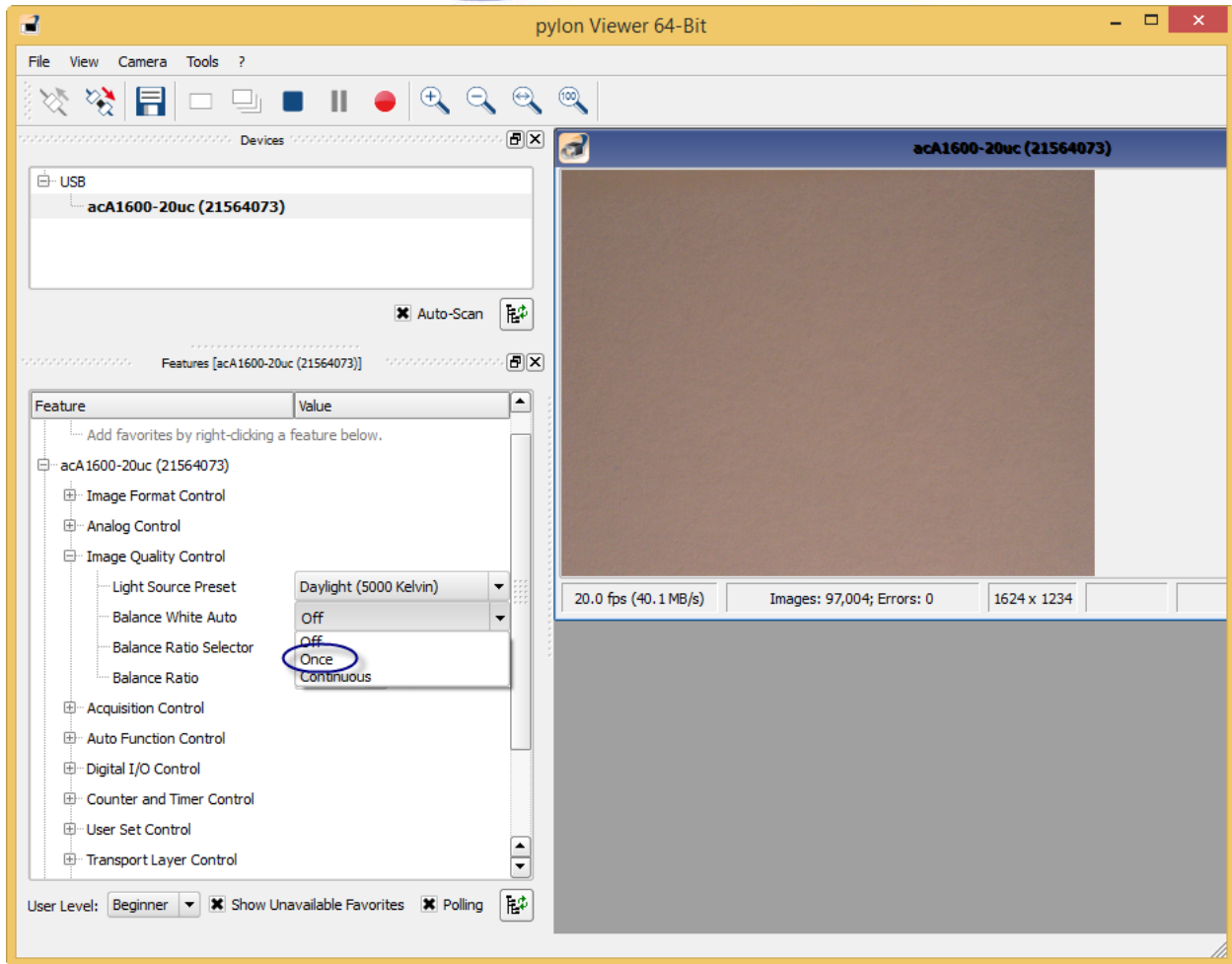
After the white balance, notice the change in color.
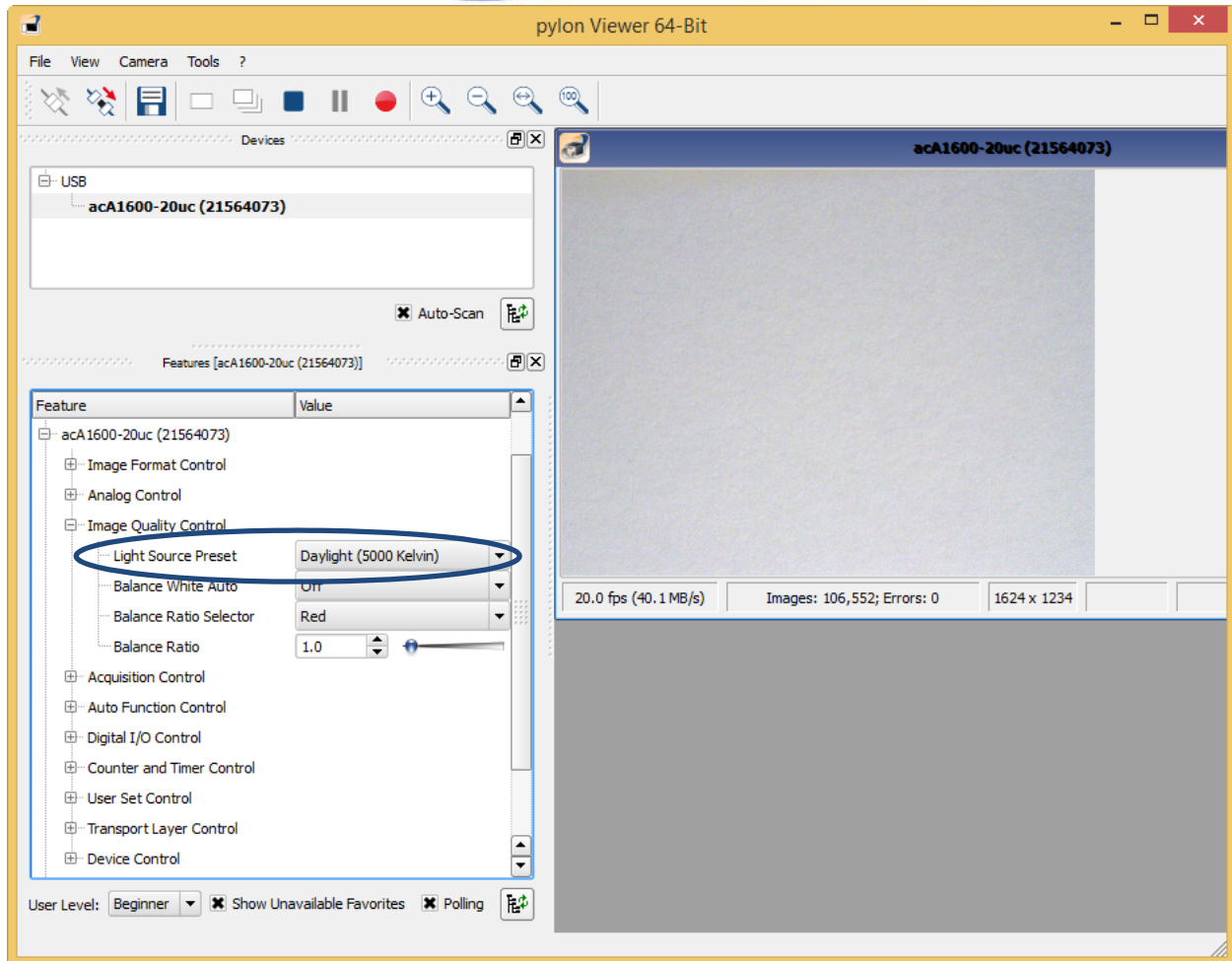
To make sure the camera is properly white balanced, remove the white object and focus on an object with colors. If the colors are accurately represented then you are done. If not, try performing another white balance and/or try changing the Lite Source Preset.

Saving the Settings

The last step is to save these new settings so that each time the camera is powered on, these new default values are used.

Before we can save the values, the capture function of the camera needs to be stopped. To do this, click the Stop button next to the Continuous capture button you click to start the camera.
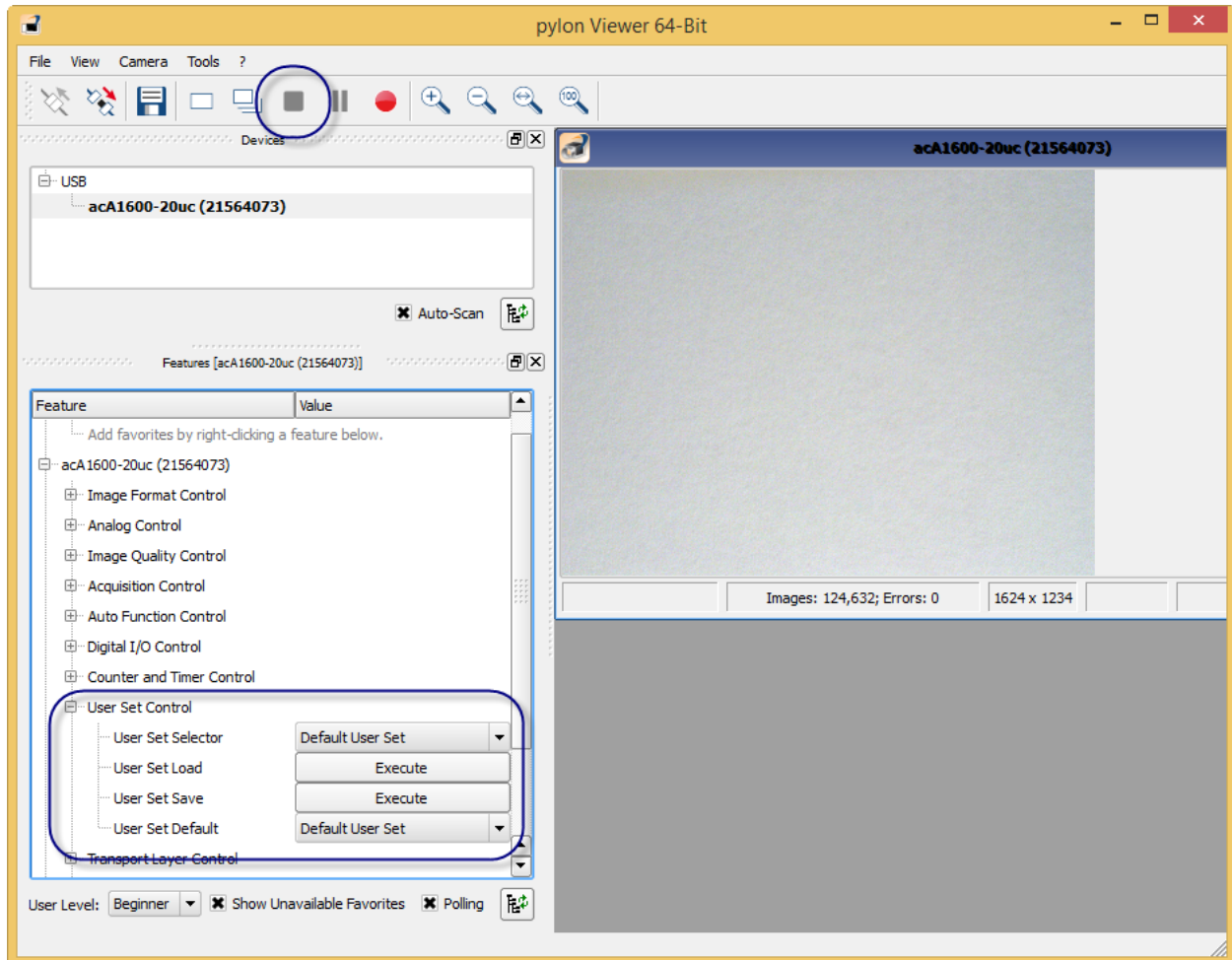

Note: In order to load preset values or save value sets, the camera must be in the stopped mode of operation.

To save the values, selected the User Set Default set, click the value entry and choose User Set 1 and click User Set Save Execute. Next, click the value entry in the User Set Selector to User Set 1, then click the User Set Load Execute button.

We saved the new default values into our User Set 1 and then told the camera to load the User Set 1 values on start up.

Note: The Default User Set contain the factory defaults values for the camera. If you have made lots of changes to different feature values and wish to start over, select Default User Set in the User Set Selector and click Execute in the User Set Load option.
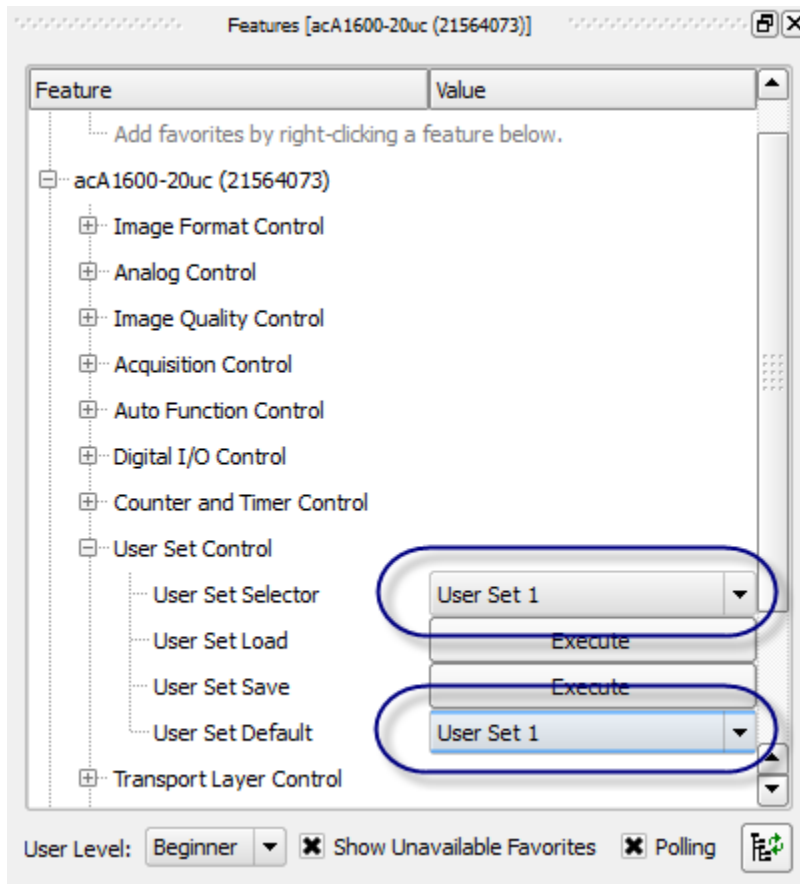
Note: When using the camera, it is easy to fine tune the feature values. The feature values are available in the Capture Properties section of the Second Opinion Professional MultiMedia Manager application.