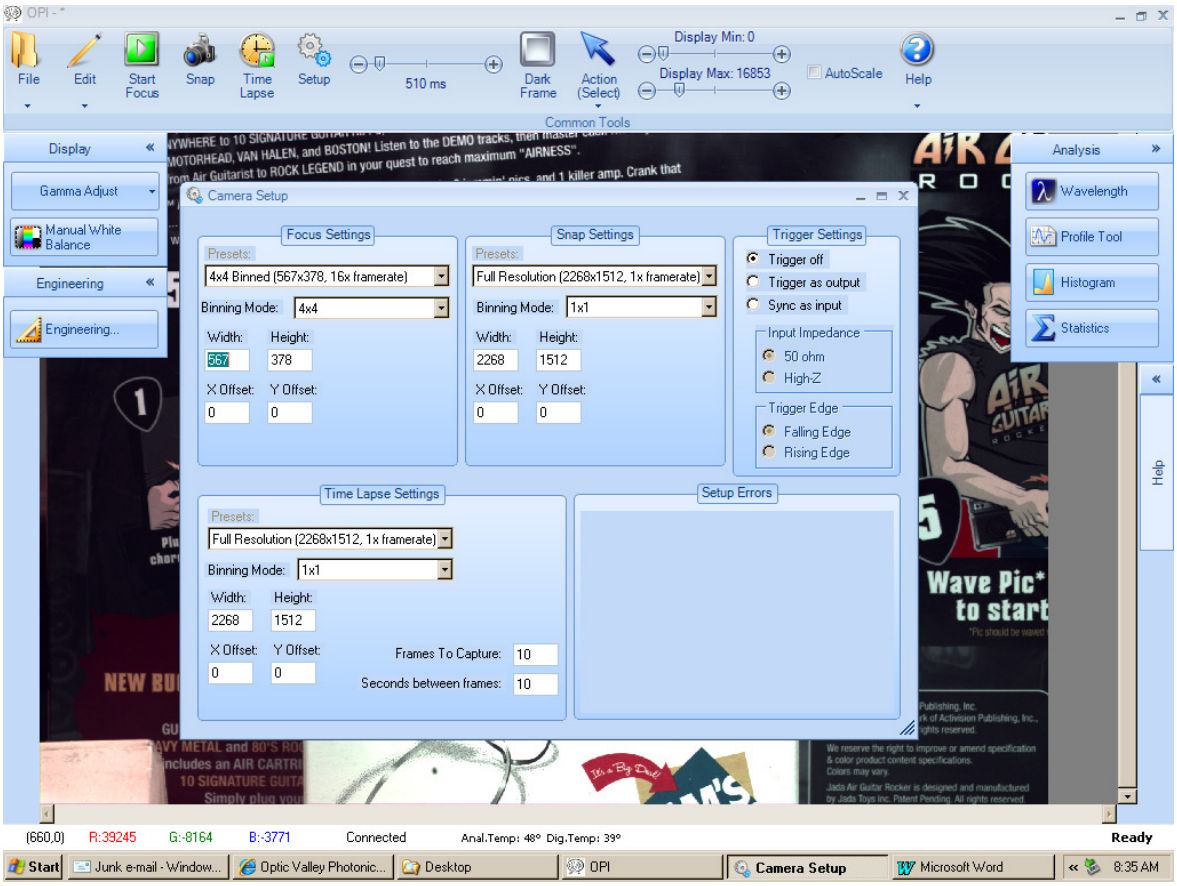
# OPI Quick Start

Welcome to OPI Application SW. This quick-start is designed to introduce you to a few of the OPI features so that you will be quickly "up and running" with your Opus I camera. If you need more in depth help, please make use of the extensive help libraries by clicking on the question mark.

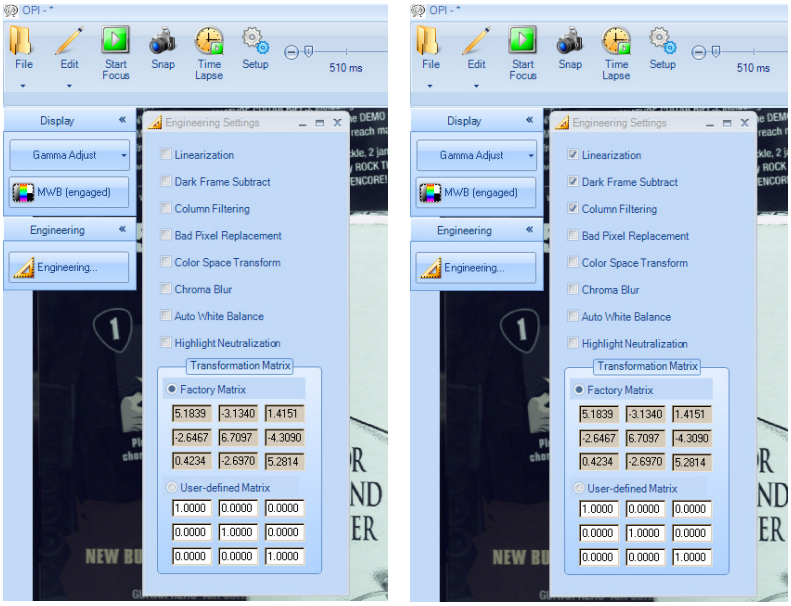
You will need to download the OPI SW onto a 2GHz or faster computer with at least 1GB of memory and running Windows XP. After OPI is installed run the program. Generally the place to start is setting up the camera by clicking "Setup" on the top ribbon. Note that this allows you to change the focus, snap, trigger, and time lapse settings. The focus frame rate is dependent upon the exposure time and the number of pixels per image. The number of pixels is determined by the independent settings of the "Binning Mode" and the frame size ("Width" and "Height"). Start with the settings given below.




Now click on "Start Focus" and adjust the camera focus. Note that the exposure slider, "Action (Select)", and Display / Scale functions are operable during the focus function. "Action (Select)" (among other functions) zooms the image. The Display / Scale function sets the black and white levels for the image display. All values below the "Min" setting will be set at the "Min" value, and likewise, all values above the "Max" setting will be "clipped" at the "Max" value. If "Autoscale" is set then the "Max" and "Min" values are set at the black and white extremes.

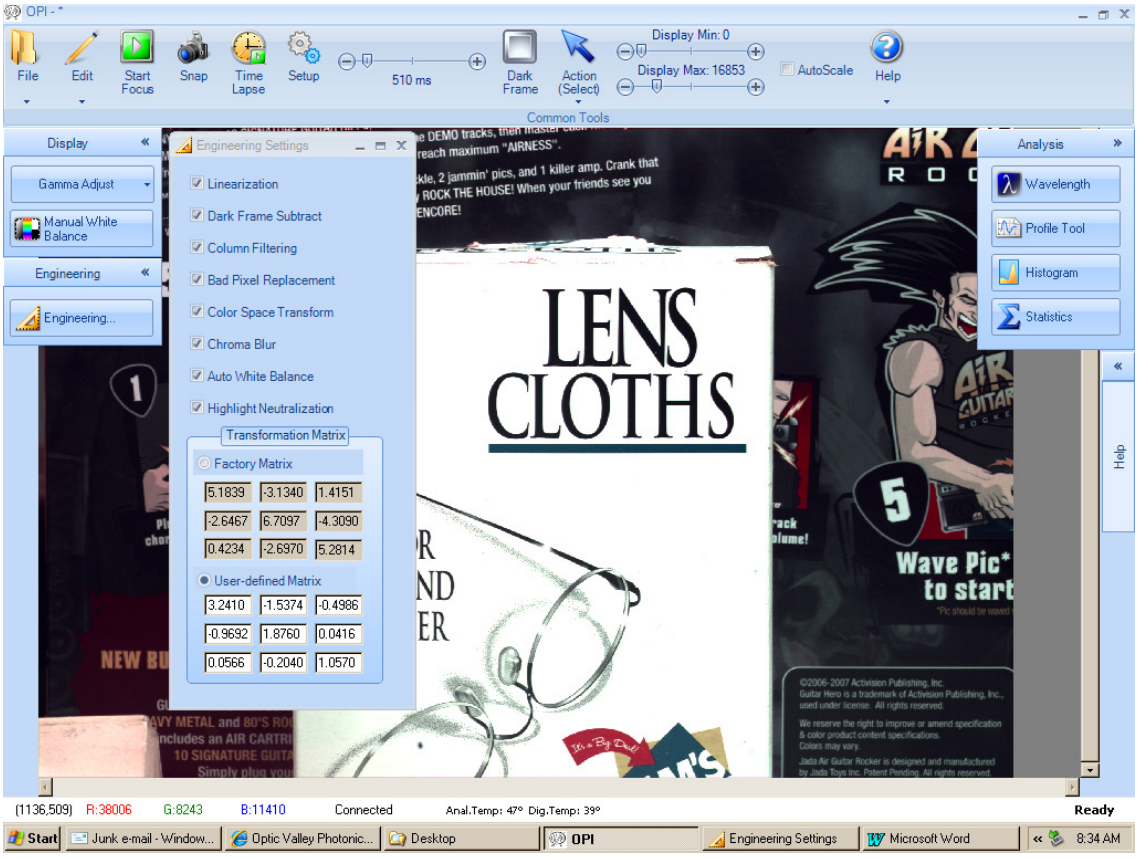
OPI has unique features designed for cameras with the Foveon sensor, particularly in the image-processing pipeline. Clicking the "Engineering" tab on the left side of the screen accesses the pipeline. Each of the steps is selectable. It is usually best to start by un-checking all of the steps (shown in the left image below) and "snapping" an image. This will allow 14 bit raw image data to be displayed (0 to 16,383 counts of which ~1,000 counts is noise). Move the cursor across the image and verify that the bright and/or dark

parts of the region of interest (ROI) are within this range. This can be accomplished by adjusting the camera exposure setting on the top ribbon, the illumination, or the lens f-stop (if available). It is usually best to adjust these until the white area count values are just below the saturation level (between 15,000 to 16,000 counts) to provide maximum image dynamic range.




Now check the first three steps (shown in the right image above) and snap another image. These three algorithms correct artifacts in the raw data without compromising the data integrity. Also, during the linearization process the data range is expanded to 15 bits (0 to 32,767 counts).

Now check all of the steps and snap another image. The camera is very sensitive to different illuminants such as daylight, fluorescence, tungsten, quartz halogen, etc. A color calibration matrix for D55 (5500K)

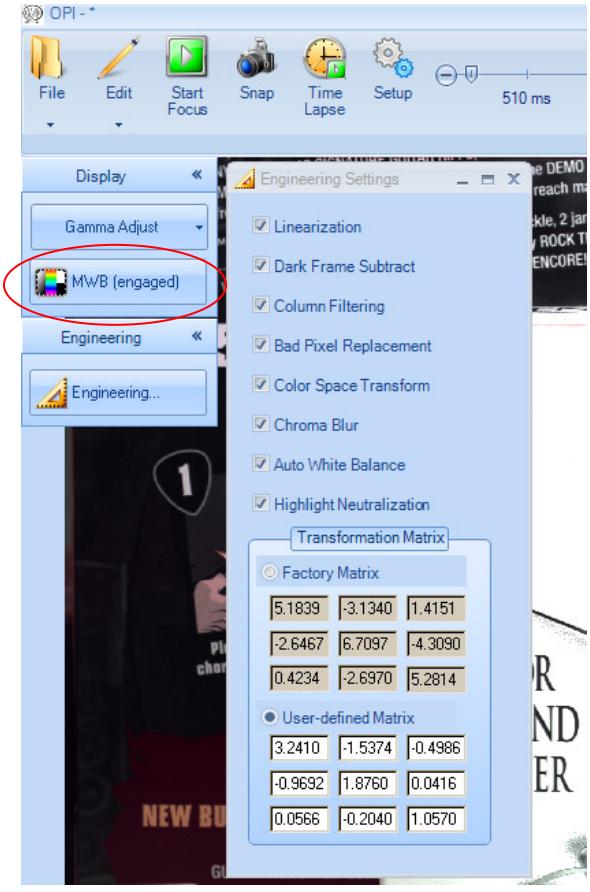


illumination is loaded in the camera and displayed in the “Factory Matrix” area. A “User-defined Matrix” is also provided that allows other color matrices to be used other than the factory matrix. For instance the matrix,

$$\begin{bmatrix} 3.2410 & -1.5374 & -0.4996 \\ -0.9692 & 1.8760 & 0.0416 \\ 0.0566 & -0.2040 & 1.0570 \end{bmatrix}$$

can be used for indoor fluorescent lighting. It is beyond the scope of this quick-start to fully explain linear transformations and color correction. However, in general the matrix major diagonal (top left to bottom right) provides the RGB strength in the image. For instance increasing the middle value will add more green to the image. The “off diagonal” values provide interactions among the channels.

Assuming the color matrix renders an image that is close to the tristimulus values, OPI offers an Auto White Balance and Manual White Balance (MWB) functions. The Auto White Balance algorithm assumes that the mean color in any image is a gray scale, and therefore adjusts the RGB values toward this mean. The MWB allows the user to “lasso” a white region and force the mean RGB values toward this new mean. To do this press the MWB button and click and drag over a white area in the image. Notice that the MWB button now reads “MWB (engaged)” and will adjust to this new “white” value for every image until the button is pressed again. At that point the MWB is disengaged.




Following these steps should allow you to quickly operate your Opus I camera. Not covered are other functions and tools offered by OPI. These can be best learned by simply trying them. Use the dialog “que” boxes by moving the cursor over a function, or by pressing the question mark. Any other questions can be answered by your representative or by contacting OVP directly (see web site, www.ovpco.com).