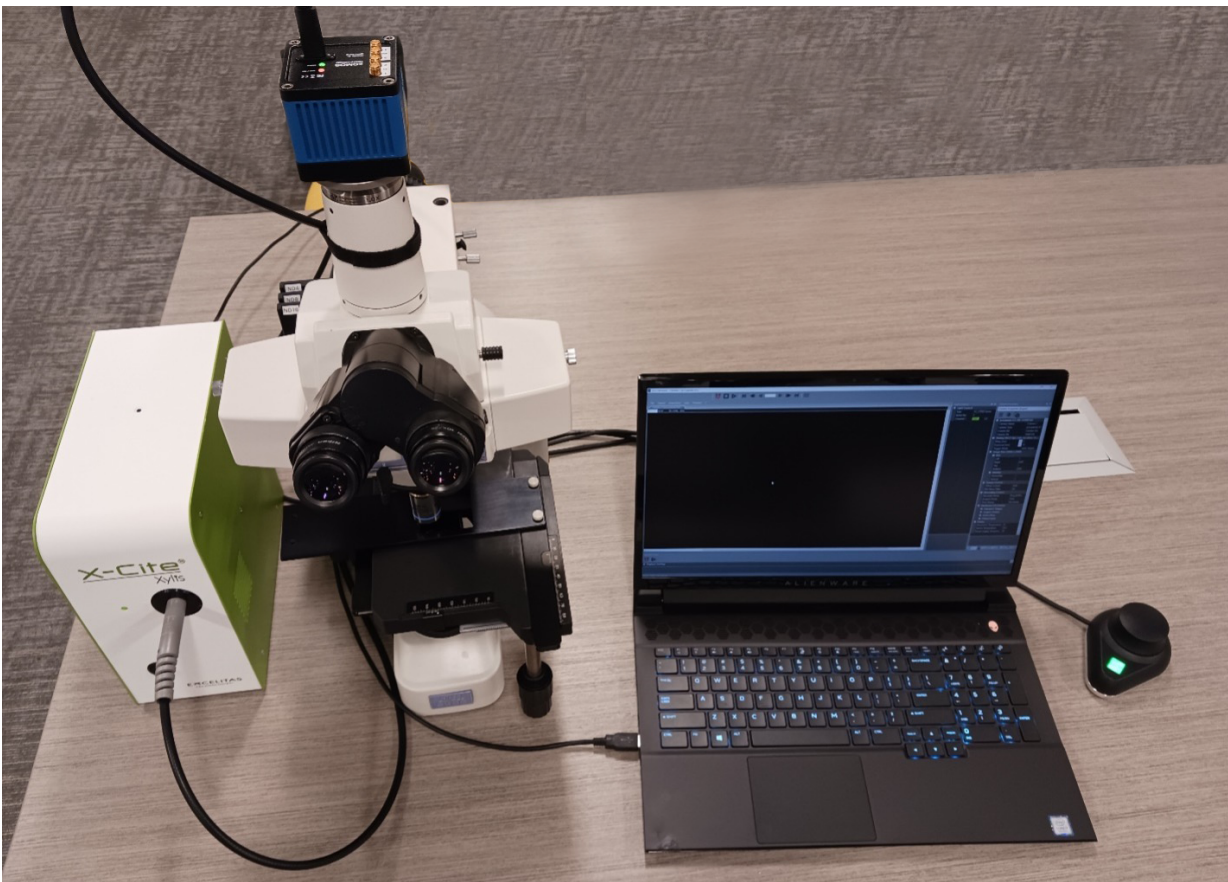


Hardware trigger (TTL) control for the X-Cite XYLIS™ II with PCO® scientific cameras

The X-Cite XYLIS II is a powerful LED illuminator that can replace HBO/Mercury lamphouses for fluorescence imaging applications. It is the perfect complement to the PCO scientific camera series. To reduce the exposure of sensitive samples which can lead to bleaching, the XYLIS II can be synchronized with the PCO camera through TTL hardware triggering, so that the excitation illumination is only applied when the camera is actively exposing.

Shown below is a typical fluorescence imaging setup with the XYLIS II illuminator, PCO camera, microscope, and computer.



The camera in this case is the pco.panda 4.2, but the following applies to most PCO scientific camera models. On the back of the camera (facing up in this application), there are four SMA type connectors. **Connector 4 is the exposure output signal.**



Connect the SMA end of the trigger cable to connector 4 on the back of the PCO camera. The other end of the cable has a BNC connector that connects to the trigger input of the XYLIS II.



Rear view of XYLIS II control box



The TTL input on the X-Cite speedDIAL must be enabled to function correctly. The enable setting can be accessed through the speed dial sub menu. With no TTL input enabled, the lower right of the speed dial display is blank (see image to left).

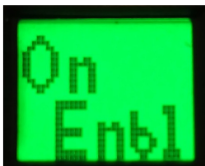
XYLIS II speedDIAL hand controller:



1. Select **TTL** from the speed dial menu:



2. Select **Enable (Enbl)**:



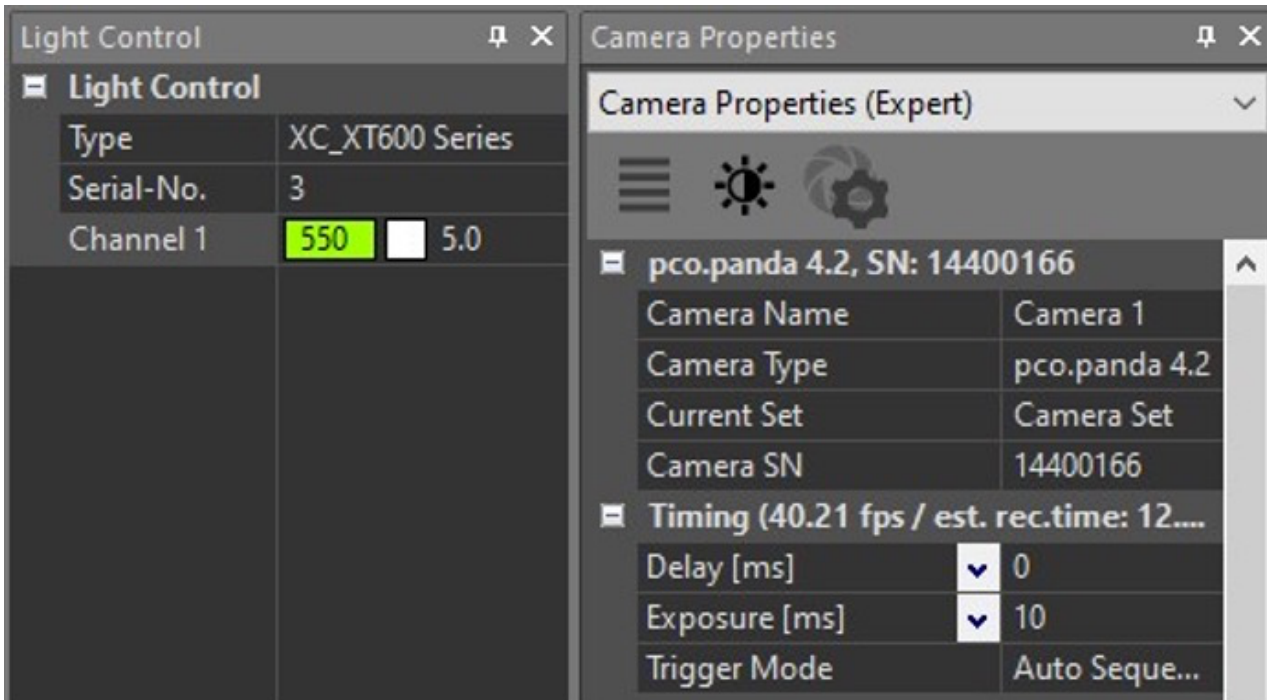
3. Select **ON**:



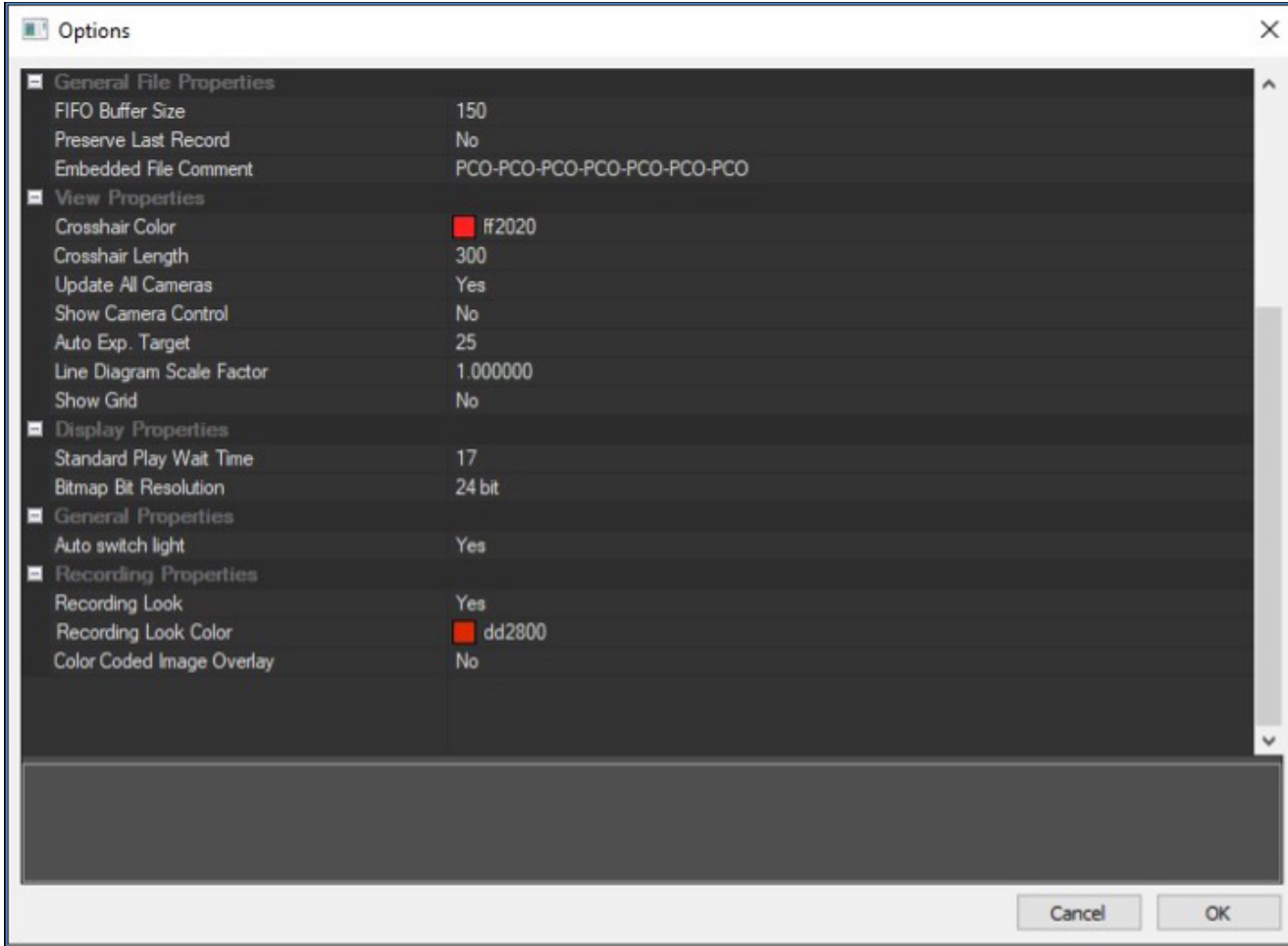
4. Exit out of the menus. The **TTL input is now active** as indicated by the BNC symbol in the lower right of the speed dial display (circle with dot in center).

Additional illumination control via pco.camware

Our camera control software, pco.camware, provides additional control of the XYLIS II light source. The light source can be enabled and disabled from the on-screen dialog, and the power level adjusted.



By default, pco.camware is configured to only switch on the light source when the camera is imaging, to prevent excessive exposure. This feature can be disabled in the software settings, allowing the light source to be switched on and off regardless of the camera status. This setting is accessed through "File...Options..." in the main pco.camware menu. The setting is "Auto switch light" under "General properties" and the default is "Yes".



In PCO cameras that have configurable exposure output timing, further reduction in the exposure of the sample can be achieved by configuring the output to be active only when all lines of the camera are exposing. These controls are found in the camera properties:

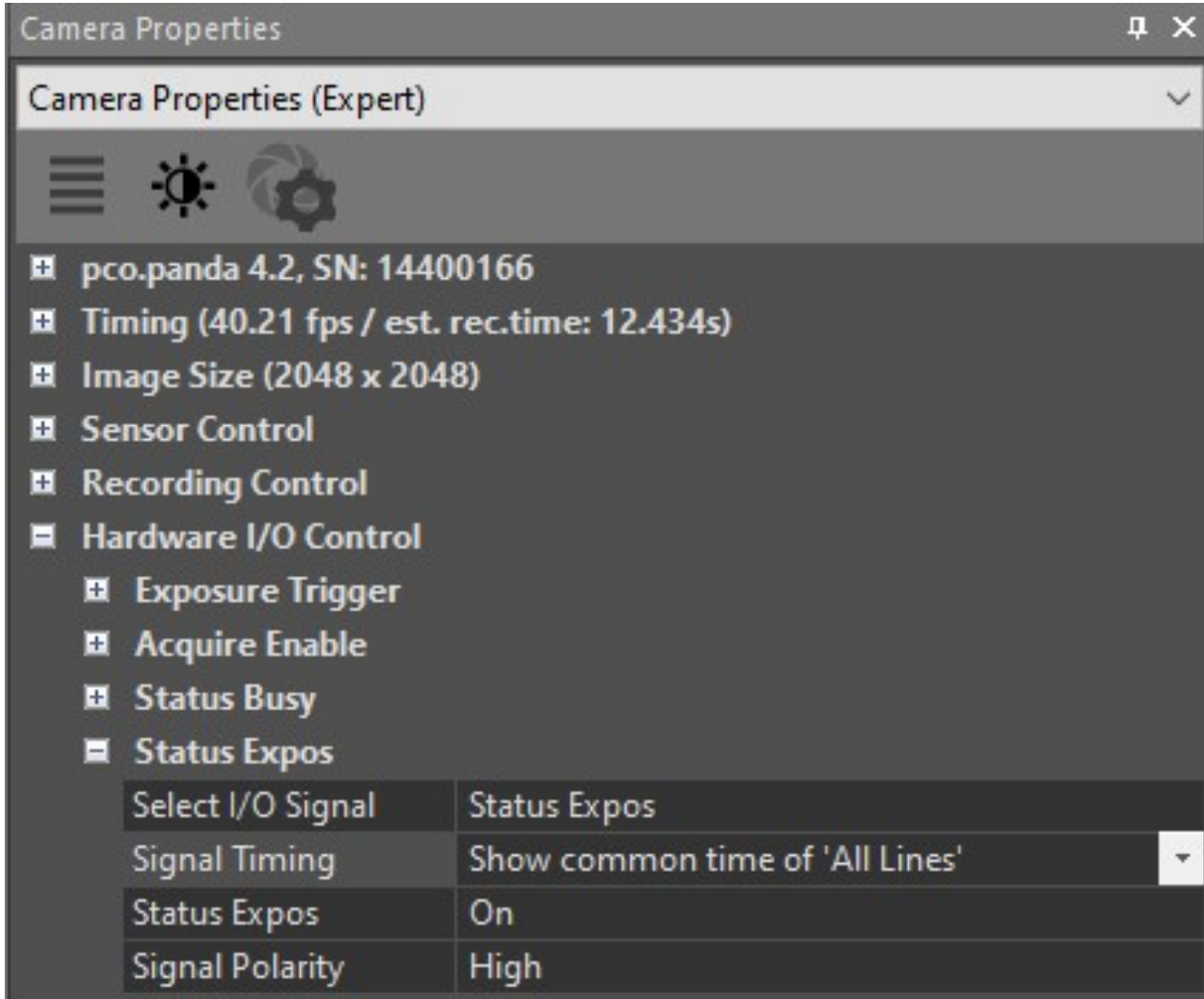
The screenshot shows the 'Camera Properties' window with the 'Camera Properties (Expert)' tab selected. The 'Signal Timing' dropdown menu is open, showing the following options:

- Show time of 'First Line'
- Show common time of 'All Lines'
- Show time of 'Last Line'
- Show overall time of 'All Lines'

The 'Show common time of 'All Lines'' option is highlighted in blue.

Select I/O Signal	Status Expos
Signal Timing	Show time of 'First Line'
Status Expos	Show time of 'First Line'
Signal Polarity	Show common time of 'All Lines'
	Show time of 'Last Line'
	Show overall time of 'All Lines'
Status	
Electronics Temperature	45
Sensor Temperature	33.5
Power Supply Tempera...	34

Select "Show common time of 'All Lines'" to minimize the length of time the light source is on.



Note that the Signal Timing is only available for PCO cameras with Rolling Shutter, while the basic Hardware I/O settings are available for all cameras. See the manual for your PCO camera for more details. The camera will still trigger the light source in sync with the exposure time without this feature.

For any questions please contact your PCO account manager or visit www.excelitas.com