

Installation of Cobra-S CameraLink and USB Spectrometers and WPOCT Acquisition SDKs

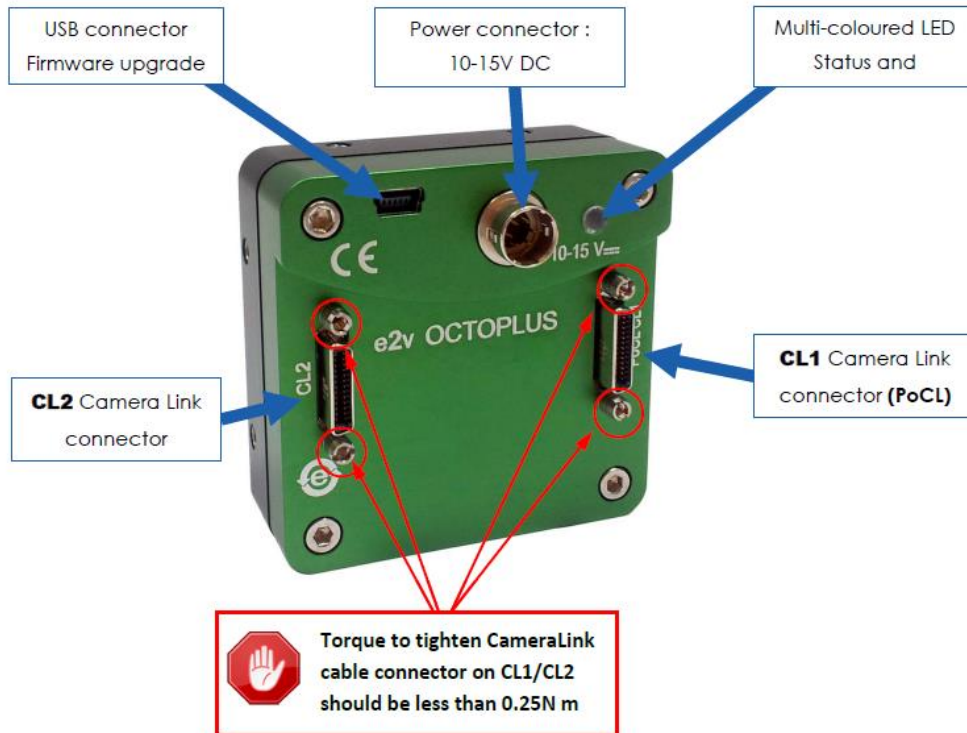
Cobra S CameraLink Spectrometer

Hardware Installation

Connect the CL1 connection to the frame grabber with a SDR CameraLink cable. If more than Base mode (2Taps) will be used, connect also CL2 connection to the frame grabber's second CameraLink port. Some frame grabbers such as PX4 and LX1 use MDR connectors instead of SDR so choose cables accordingly.

Power can be supplied via the 6-pin connector or through Power over CameraLink if the cable and frame grabber support that option. 12V DC is recommended, but the camera will work with range of 10-15V.

The extra mini usb connector is reserved for doing firmware upgrades and should not be connected unless performing a firmware update.



The FC/PC side of the optical fiber should connect to the spectrometer with the key aligned to the keyhole so fiber will insert to the right position.

Installing the SaperalT Libraries

Either the SaperalT CamExpert or SaperalT SDK should be installed. The SDK version is the most complete and includes CamExpert software and programming examples.

Also install the driver for the specific Dalsa frame grabber being used.

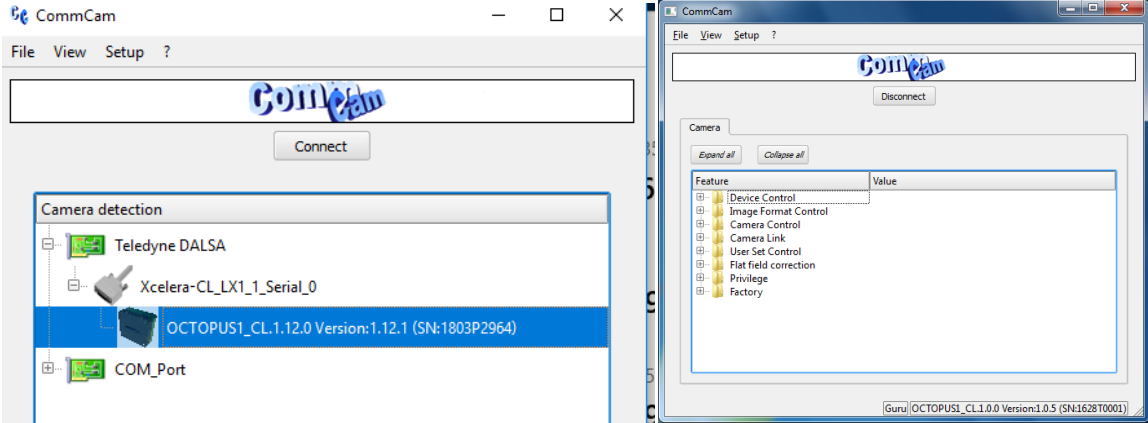
The Saperal libraries are not required if using a different brand frame grabber such as National Instruments, Bitflow, etc. Note that the WPOCT SDK's are only compatible with Dalsa frame grabbers and x64 environment.

Installing CommCam

CommCam is a program from Teledyne E2V specifically for OctoPlus CameraLink cameras on Cobra-S spectrometers to provide a graphical control interface for controlling the camera through serial commands. It is compatible with most frame grabbers. At least version 3.1.15 should be used to ensure compatibility and that camera will be detected.

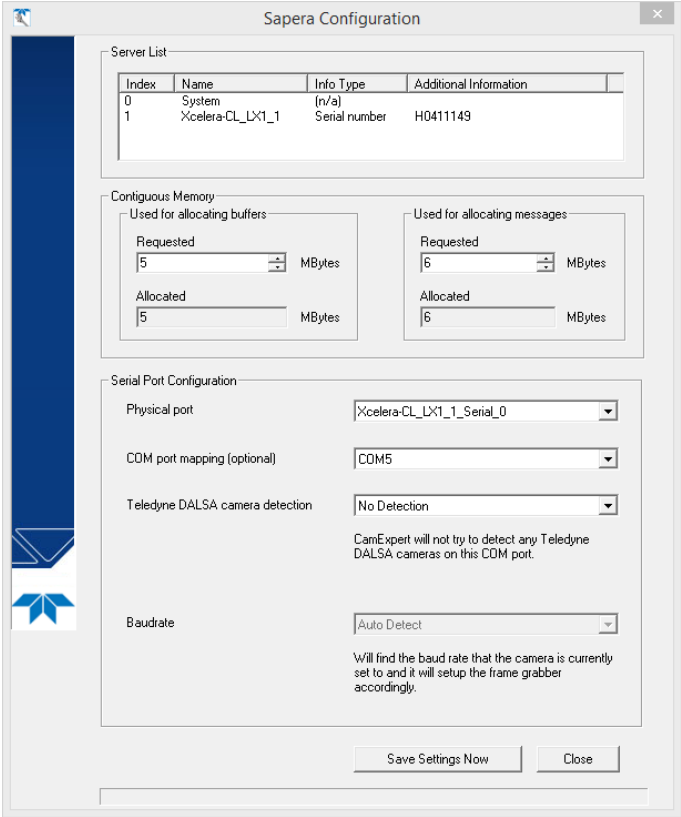
The latest version can be downloaded from the em4 product page:

<https://www.teledyne-e2v.com/products/space/cameras/aviiva-em4-3/#>



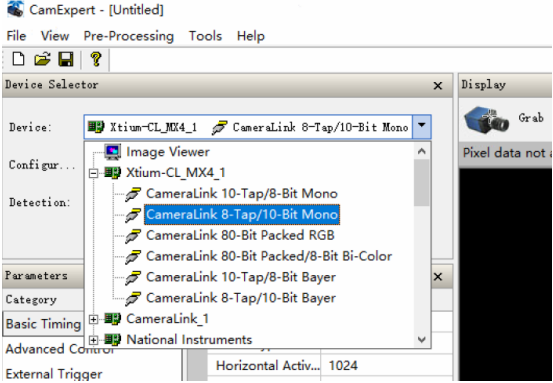
An alternative way to control the camera are by the direct serial commands through the CameraLink serial port of the frame grabber with a program like TeraTerm or by writing custom software.

If CommCam does not find the serial port of the frame grabber directly or you want to use Teraterm, it will be necessary to map the frame grabber’s serial port to a Windows comport with the *Sapera Configuration* program. A restart will be required after changes to com port mapping.

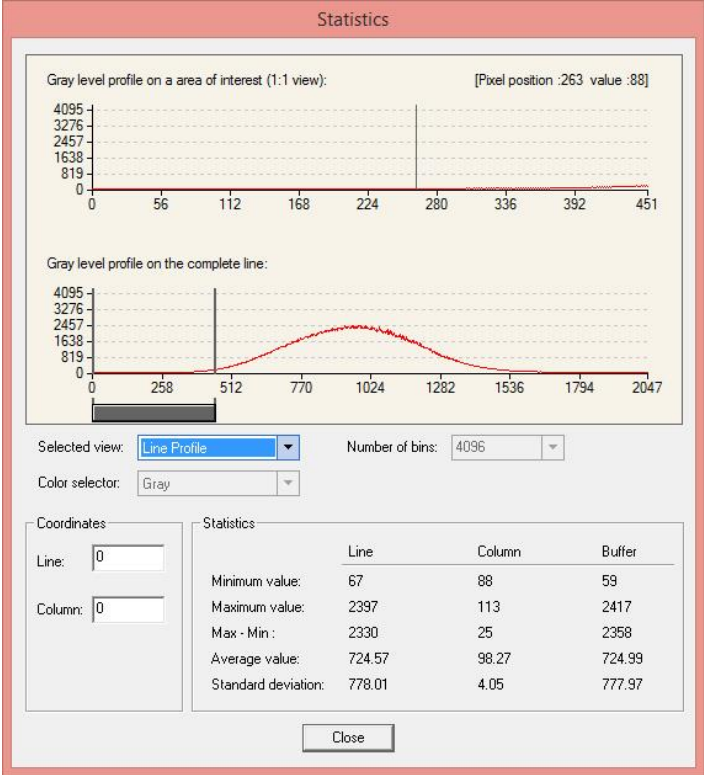


Running Spera CamExpert

Camexpert allows the user to control the frame grabber parameters and preview the spectrometer output. Once the program is opened, choose your frame grabber and CameraLink configuration from the device list dropdown. Then configure parameters or open a CCF file that matches the desired configuration. The user can then modify the configuration and edit or save new CCF files for the specific application.



Press the grab or snap button to start or take acquisitions. The graph button will allow the user to see a histogram and line plot of the signal.



Note: Some frame grabbers such as MX4 and PX8 have multiple firmware configurations that change what CameraLink configurations are available under the device. CCF file formats also change with many of the configurations so it may be necessary to work from a different template or start from scratch when wanting to work from a different CameraLink mode or frame grabber configuration.

Cobra-S USB 3 Spectrometer

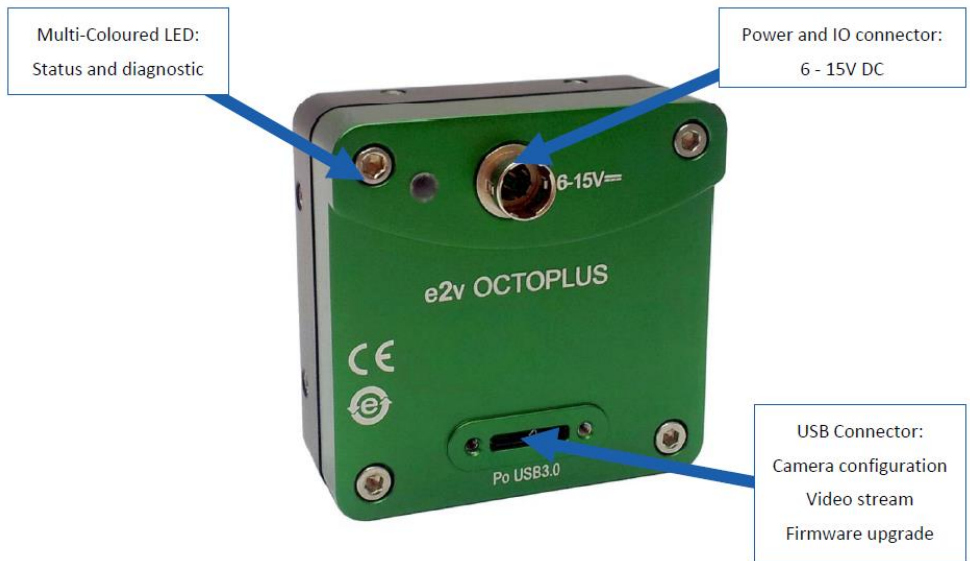
Hardware Installation

Connect the E2V OctoPlus USB camera to a USB3 port on the computer with a USB3 cable. The connector on the camera is a MicroUSB 3. Locking connectors work best for most stable connection.

Example: <https://www.usbfirewire.com/locking.html>

The FC/PC side of the optical fiber should connect to the spectrometer with the key aligned to the keyhole so fiber will insert to the right position.

Note: The power to the camera is already supplied to the camera via the usb connection, but it is possible to supply additional power source to the camera by the 6-pin connector. The pinout for the 6 pin connector USB vs CameraLink version of the cameras are different. The 6-pin connector also serves as an GPIO connection for triggers and test points.



Signal	Pin	Signal	Pin
PWR	1	GND	4
GPO	2	GPI	5
$\overline{\text{GPO}}$	3	$\overline{\text{GPI}}$	6

	Power supply from 6 to 15v GPI input voltage: max 6V
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Installing the E2V Demo App and C++ SDK

To install drivers, demo program, and manufacturer SDK, run SetupCameraCmosOctUsb3_x64.exe (or x86).

Launch the "CameraCmosOctUsb3" Demo app with the start menu icon or desktop icon CameraCmosOctUsb3.

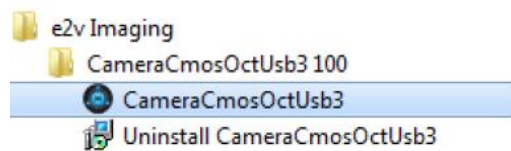
The installer will also load the E2V SDK files in:

C:\Program Files (x86)\Teledyne e2v\CameraCmosOctUsb3\SDK

or

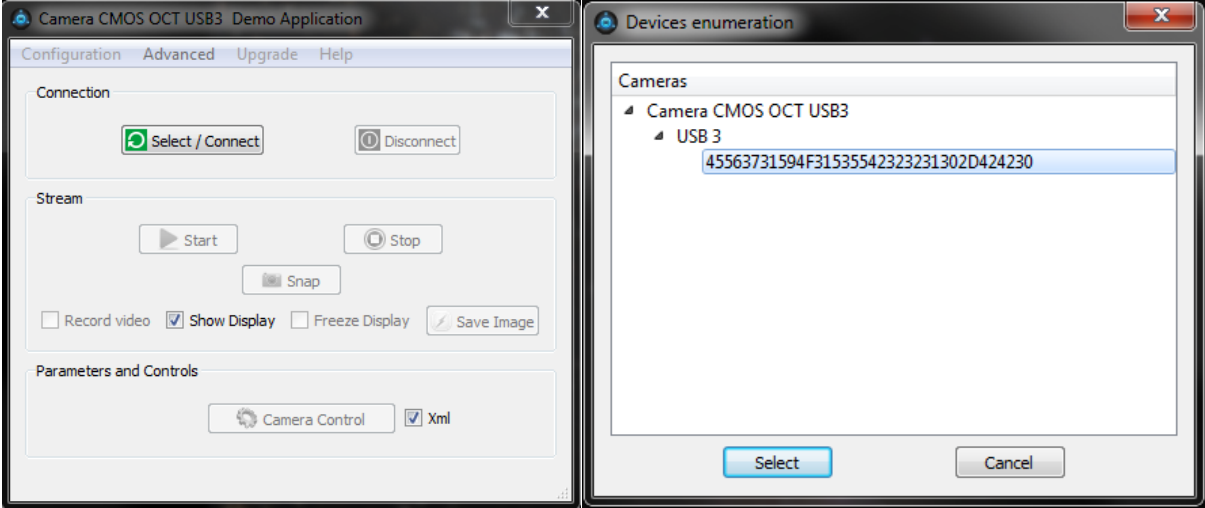
C:\Program Files\Teledyne e2v\CameraCmosOctUsb3\SDK

See the E2V OctoPlus USB3 Manual for more information.

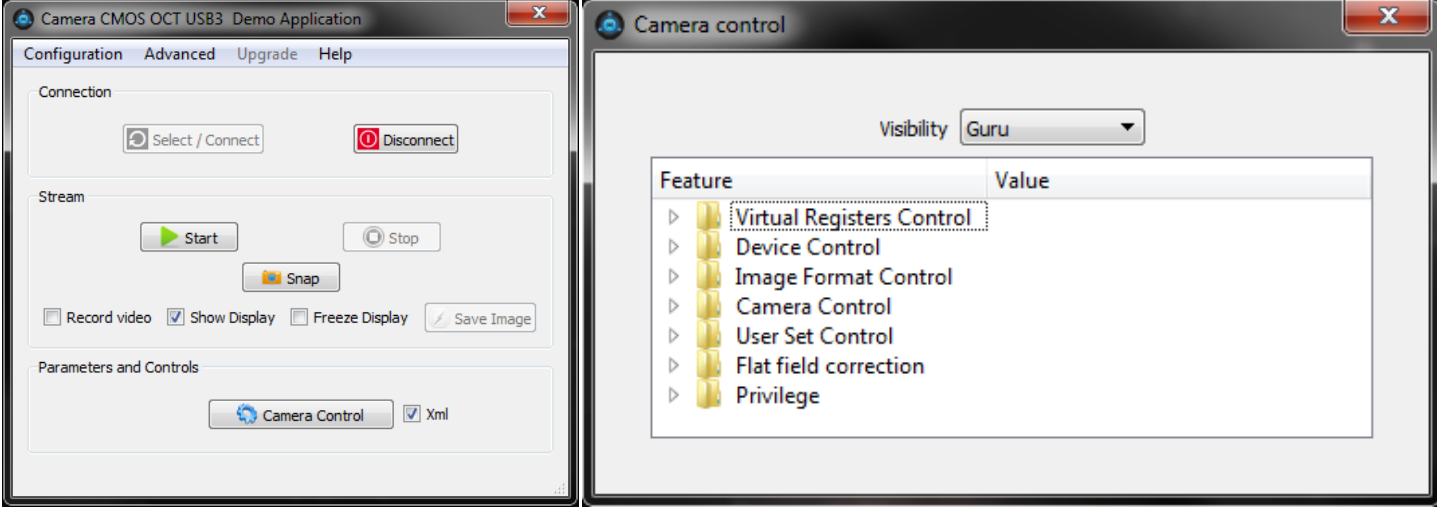


Running the E2V Camera Demo App

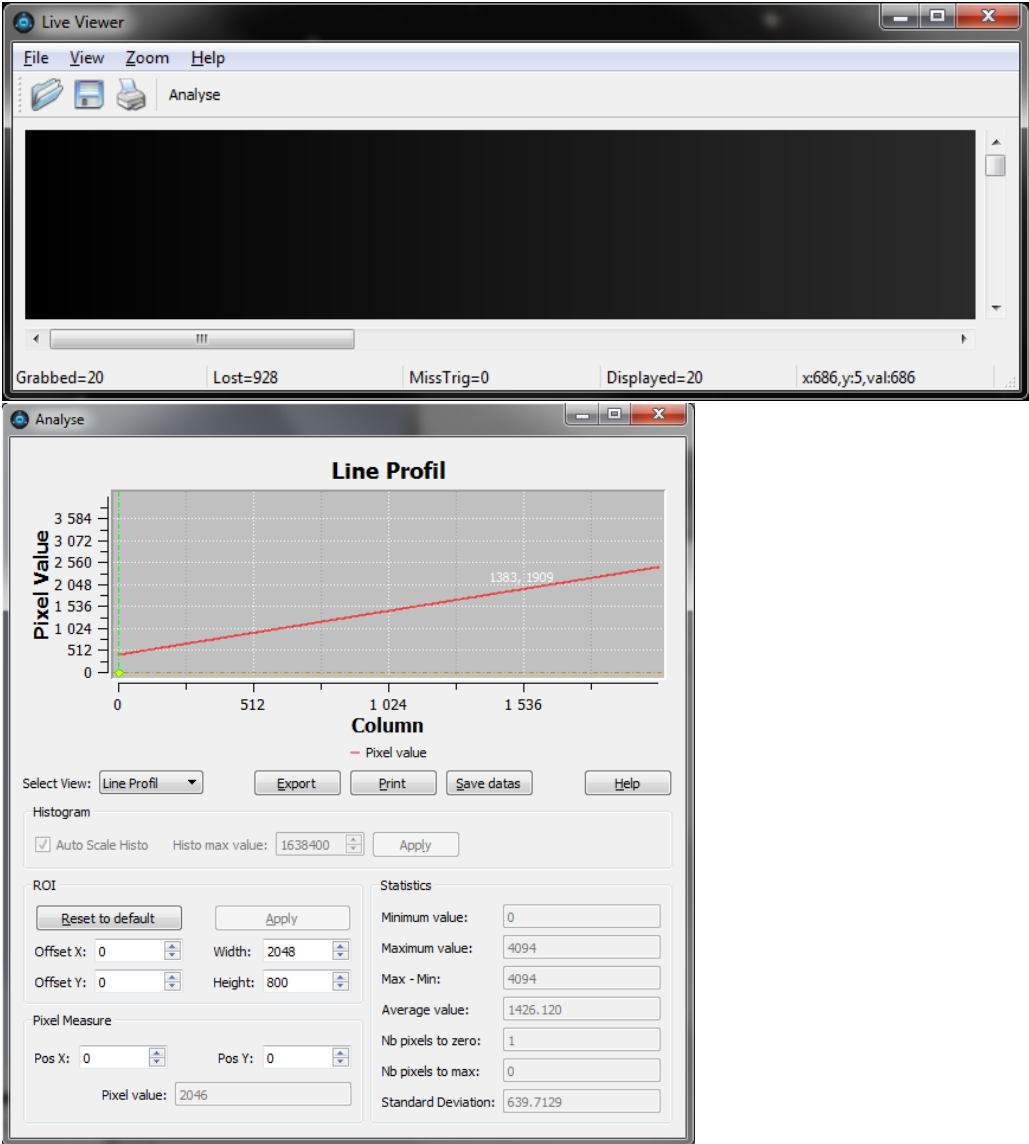
In the demo app panel, click *Select/Connect* to show a list of available cameras and double click on the device or choose device and press *Select*.



Once the software opens the camera, you can press camera control to access camera parameters, change software configuration options, or start acquiring.

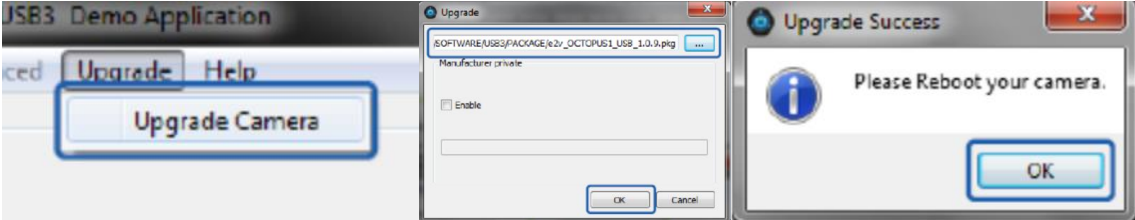


To display a live image, check the *Show Display* checkbox and a *Live Viewer* window will appear. To see a graphical representation of the image, press *Analyse*.



Firmware Upgrade

To upgrade or change the camera firmware, click on *Disconnect* if already connected, and then click *Upgrade Camera* in the *Upgrade* dropdown menu. Select the firmware (.pkg) file and then click *OK*. Once the process is finished, reconnect the USB cable to reboot camera. This process is outlined in more detail in the E2V OctoPlus USB3 user manual.



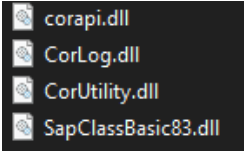
Firmware upgrades may be necessary to be fully compatible with different SDK versions.

WPOCT Acquisition SDK's Installation and Operation of SDK Demo Apps

Note: The SperaLT SDK from Teledyne Dalsa for CameraLink and E2V OctoPlus SDK from Teledyne E2V for USB3 are free to use and develop from. We offer additional WPOCT Acquisition SDK's with Example Demo Apps for C++, Labview, and Matlab for separate purchase that support CameraLink cameras on several Dalsa frame grabbers and also supports OctoPlus USB3. The WPOCT Acquisition SDK's are developed for 64-bit only. Contact us if you are interested in trying out one of the SDK's.

Dependencies and USB DLL's

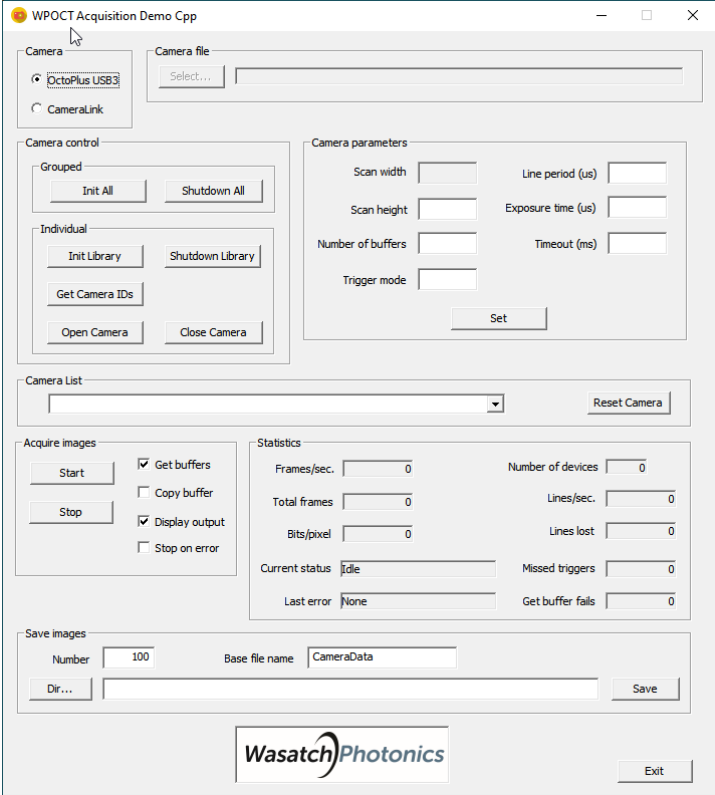
In order to run the WPOCT Acquisition SDK's Demo Apps for C++, Matlab, and Labview with USB3 cameras, the camera driver, Microsoft Visual C++ 2010 and 2015 x64 should be installed. For CameraLink cameras, the SperaLT libraries should be installed along with the Dalsa frame grabber driver. These dependencies are included as separate files along with the SDK or can be downloaded from the web. Also, specifically for USB cameras, either the SperaLT libraries should be installed or the CameraLink dll's need to be copied from the CameraLink folder into the parent (WPOCT Acquisition...) directory. For the Labview demo, the dll files are in the *C:\Program Files\National Instruments\LabVIEW 201X\user.lib\UtensilMLCamera\CameraLink* directory.



Additional info about each SDK is in the getting started and API references that come with each SDK.

C++ Example

To install and run, extract the demo zip folder to a directory of your choice and run *WPOCTAcquisitionDemoCpp.exe*



Labview Example

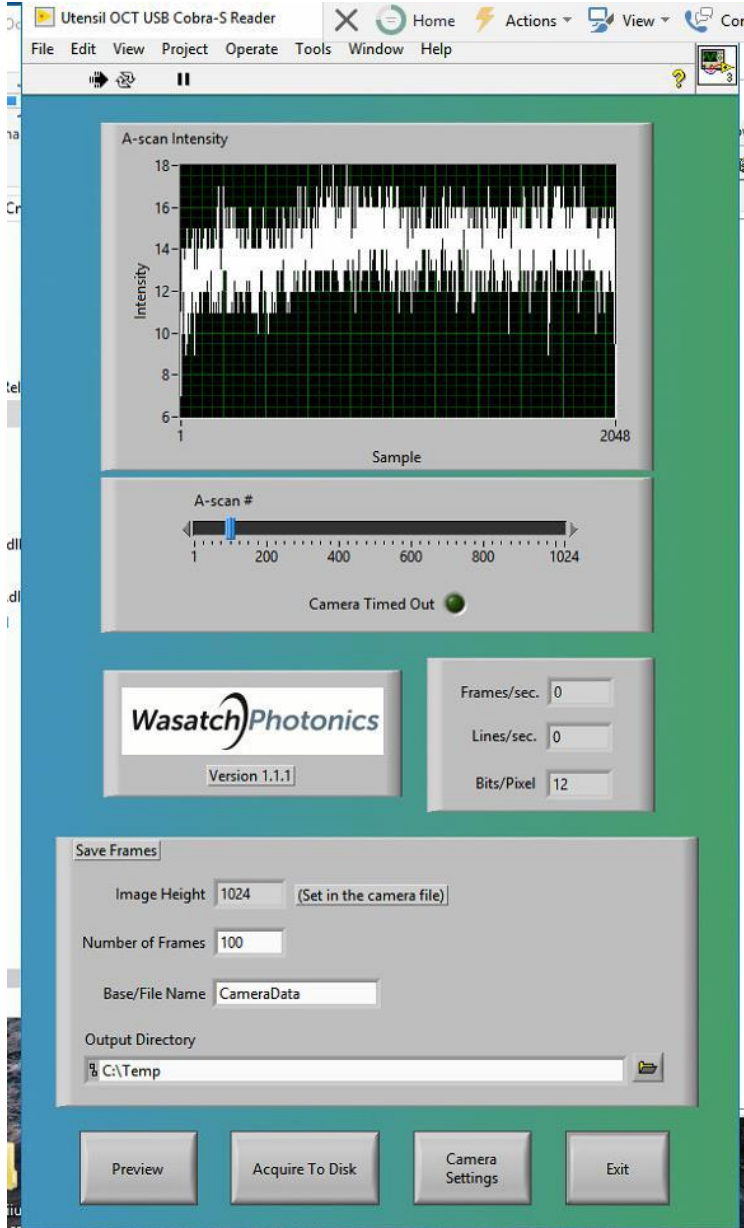
Extract the Labview project folder to a directory of your choice and copy the *UtensilMLCamera* folder in
...WPOCT Acquisition Labview 64 Camera....\Program Files\National Instruments\LabVIEW
2017\user.lib\UtensilMLCamera

To C:\Program Files\National Instruments\LabVIEW 2017\user.lib\UtensilMLCamera

Open the *Utensil OCT Camera.lvproj*

For USB cameras, run the *USB Cobra-S Reader.vi*

For CL cameras, run the *CameraLink Cobra-s Reader.vi*



Matlab Example

To install and run, extract the demo zip folder to a directory of your choice and open the directory in Matlab. Run the Run *UtensilOCT_USB_CobraS.m* for USB camera and *UtensilOCT_CameraLink_CobraS.m* for CameraLink camera.

