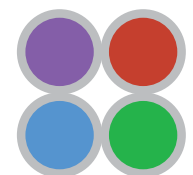


Controlling the SPECTRA III Light Engine[®] with Olympus cellSens Software



lumencor[®]

Equipment Required

1. SPECTRA III Light Engine^[1]
2. National Instruments USB-6501 Digital I/O Device
3. Lumencor 9-channel TTL breakout cable (29-10156)^[2]
4. Olympus cellSens software

USB-6501 Digital Output	SPECTRA III Output Channel	DB15HD PIN#
P1.0	Violet	13
P1.1	Blue	12
P1.2	Cyan	3
P1.3	Teal	11
P1.4	Green	2
P1.5	Yellow	15
P1.6	Red	1
P1.7	nIR	14

Pins 6,7,8,10 = Ground

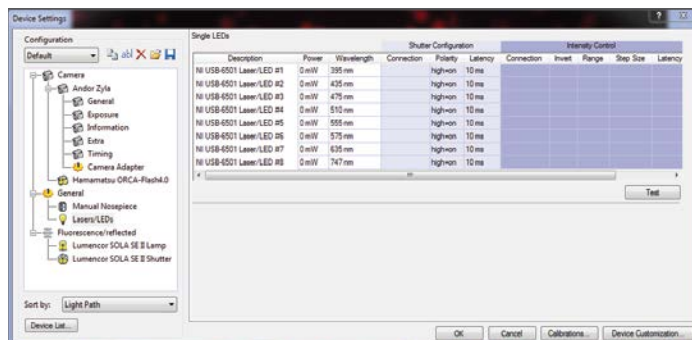
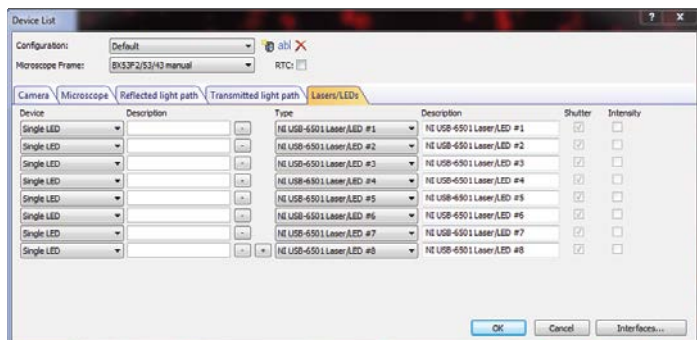
Notes

[1] The CELESTA light engine can also be controlled by cellSens using the methods described in this installation note.

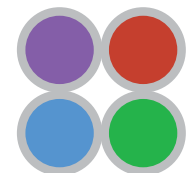
[2] The USB-6501 digital outputs must be connected to individual BNC female terminals for connection to the TTL breakout cable. The connection scheme is shown in Table 1. Alternatively, a breakout cable with a DB15HD connector compatible with the SPECTRA III TTL port may be wired directly to the USB-6501 output ports.

Set Up

1. Connect the USB B port of the USB-6501 to the host computer ^[1]. Connect the TTL port of the SPECTRA III to the USB-6501 digital outputs as described above.
2. Start Olympus cellSens and power on the SPECTRA III light engine. Make sure that the output end of the liquid light guide or optical fiber connected to the light engine is safely directed into an enclosed optical path.
3. Navigate to **Acquire>Devices>Device List**.
4. On the Lasers/LEDs tab, set up the configuration shown in the screenshot on the left^[2].
5. Navigate to **Acquire>Devices>Device Settings**.
6. Select Lasers/LEDs in the device tree and set up the configuration shown in the screenshot on the right.



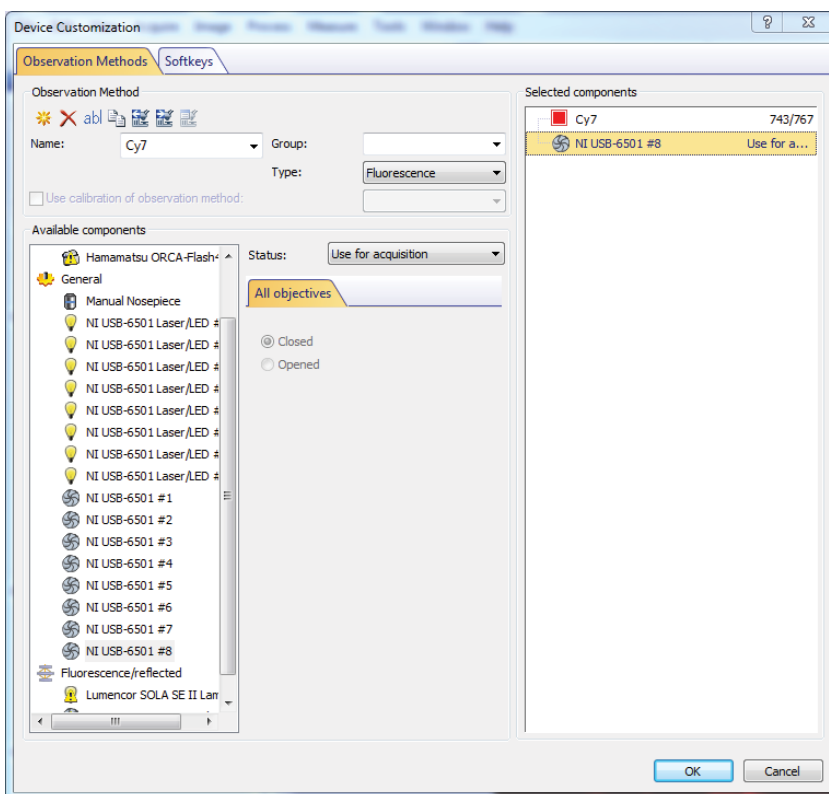
Controlling the SPECTRA III Light Engine[®] with Olympus cellSens Software



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Set Up (Cont.)

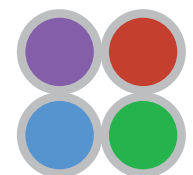
7. Connect the light engine LAN port to the computer using the RJ45 ethernet cable provided. Open the light engine GUI in any web browser following the instructions in Lumencor Installation Note 54-10046. On the GUI Settings tab, set TTL inputs = Enabled and TTL polarity = Positive.
8. In cellSens, press the **Test** button on the **Device Settings** panel. Pressing the labeled enable buttons on the **Test** panel (shown on the right) will turn on the respective light output channels, registered by illumination of the **source enabled** indicator LED on the front panel of the light engine.
9. Navigate to **Acquire>Devices>Device Customization**.
10. For each of the eight SPECTRA III light output channels, set up an observation method as shown in the screenshot below. Ensure that the status setting for the shutter component is set to "use for acquisition".



Notes

- [1] Download and install the USB-6501 drivers from www.ni.com/en-us/support/downloads/drivers/download.ni-daqmx.html#301173
- [2] The microscope frame setting is non-critical.

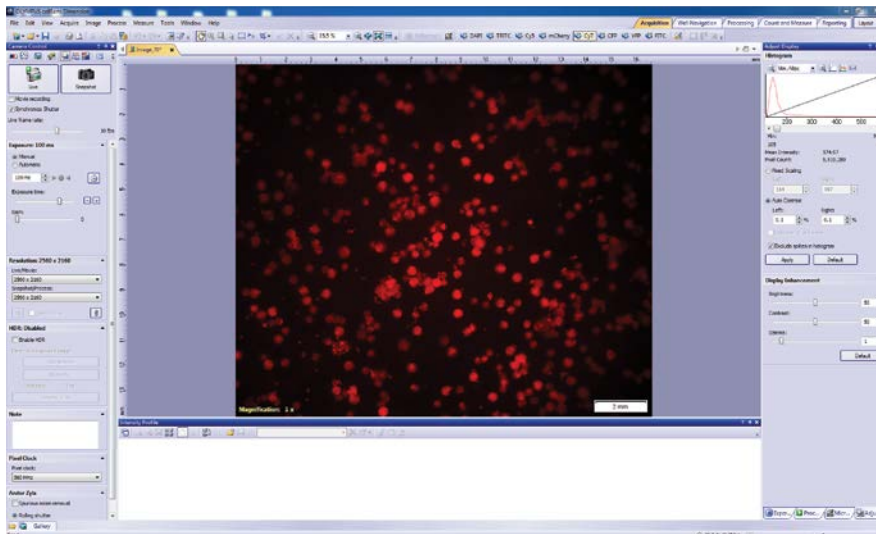
Controlling the SPECTRA III Light Engine[®] with Olympus cellSens Software



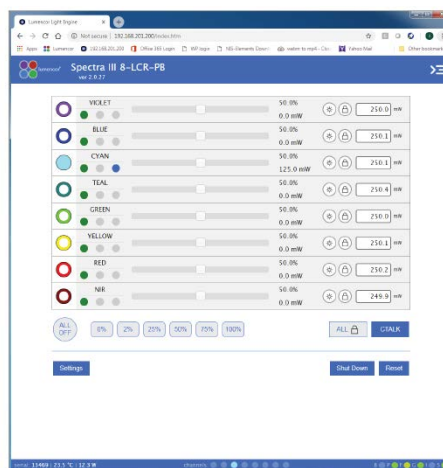
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Operation

1. Select the appropriate observation method for the fluorophore of interest on the cellSens taskbar. In the example shown below, Cy7 excitation is selected.



2. To acquire image data, press **Live** or **Snapshot**.
3. Light output intensity is controlled independently by the sliders in the light engine GUI accessed via a LAN connection and a web browser application.^[1]



Notes

[1] Leave the ON/OFF radio buttons in the GUI in the OFF (unfilled) position when using TTL control of SPECTRA III channel selection and ON/OFF status.



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