Quick Start Guide for cellSens Dimension

IQS002- Rev 06

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Contents

1   Integrated CoolLED Products:

Please note compatibility with cellSens packages below:

CoolLED Illumination System	cellSens Dimension	cellSens Standard
pE-800 Series (pE-800 and pE-800^{fura})	✓	
pE-4000	✓	
pE-300^{white}, pE-300^{ultra}	✓	✓
pE-340^{fura}	✓	✓
pE-2	✓	

2   Setting up your CoolLED Illumination System COM Port via USB:

If using the pE-800 Series and Windows 10, please move directly to Section 3, since the pE-Driver is not required (Windows automatically detects the hardware and installs the driver).

For Windows versions pre-dating Windows 10, or if using any other compatible Illumination System, the CoolLED pE-Driver is required and the PC configured as follows:

1.   Download the CoolLED pE Driver file from the CoolLED website:

https://www.coolled.com/support/imaging-software/#coolled-pe-driver

N.B. This is a general driver for Windows and all USB controlled CoolLED Illumination Systems, and the pE-800 Series when using Windows operating systems earlier than Windows 10.

2. Save the files to a memorable location.

3. Connect the CoolLED Illumination System. When the driver required warning (yellow exclamation mark) appears, right click and 'update' the driver, pointing it to the .inf file in the previously downloaded driver folder.

4. Check the Virtual COM ports assigned by navigating to Device Manager (Start -> Control Panel -> System Management -> System -> Hardware -> Device Manager). The CoolLED Illumination System should be listed under 'Ports' (COM & LPT):
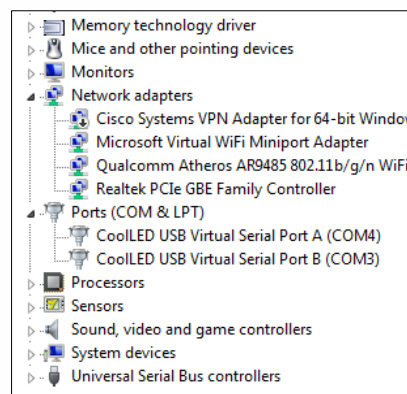

Figure 1: Device Manager with pE-4000 installed

Either COM port may be used for control. The creation of two COM ports is to allow for multiple uses (for example: one could be used for controlling the CoolLED Illumination System whilst the other is used for command testing).

3 Installing your CoolLED Illumination System in cellSens

1. During installation and setup of your configuration, when the 'Microscope Accessories Selection' screen appears (Figure 2), locate CoolLED in the list and select relevant Illumination System(s).
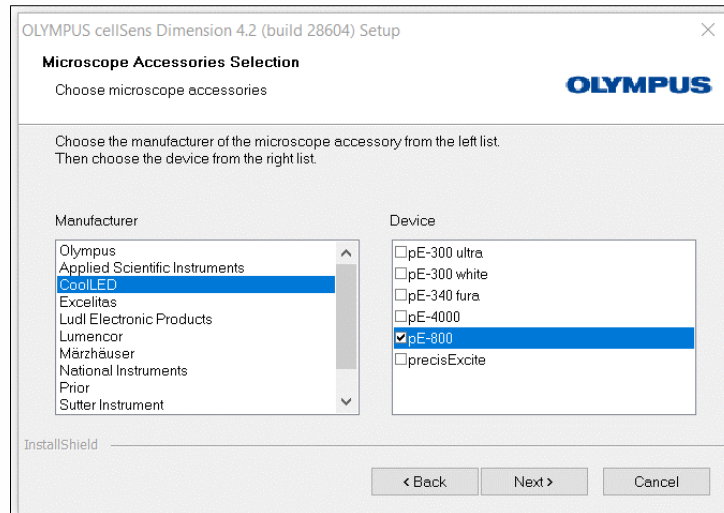
Figure 2: CoolLED devices listed in 'Microscope Accessories Selection'

4 Configuring your CoolLED Illumination System in cellSens

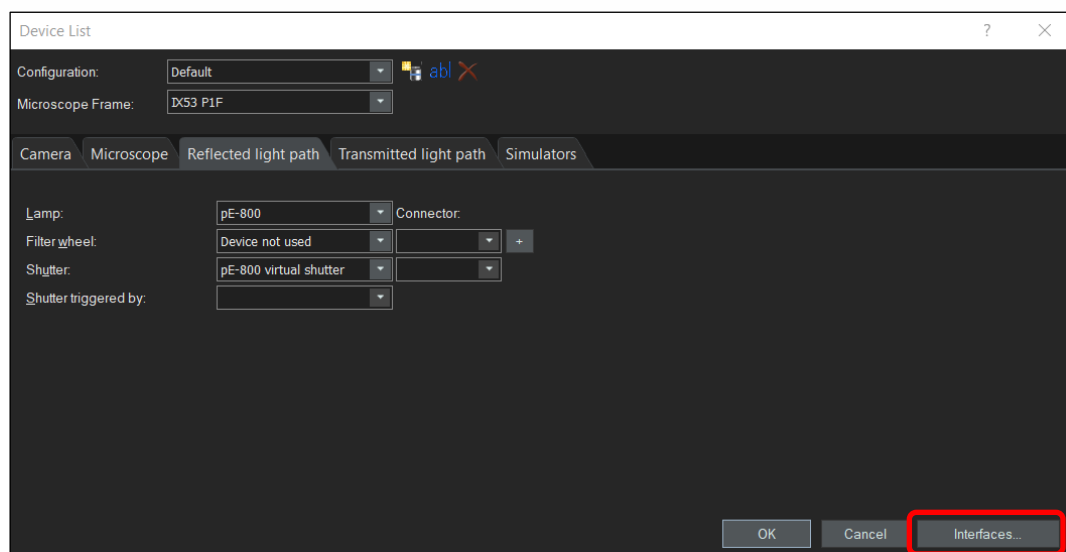1. From the cellSens start up screen, navigate to the 'Device List'.

Figure 3: 'Device List'

2. In the 'Lamp' dropdown, select the CoolLED Illumination System (in this example pE-800) and in the 'Shutter' dropdown select the 'Virtual Shutter'.

3. On the same screen, click on 'Interfaces' (red box, Figure 3). If you have followed the steps in Section 2, assign the COM port identified here. If using the pE-800 or pE-800^{fura} with Microsoft Windows 10 or later, this will be automatically assigned.
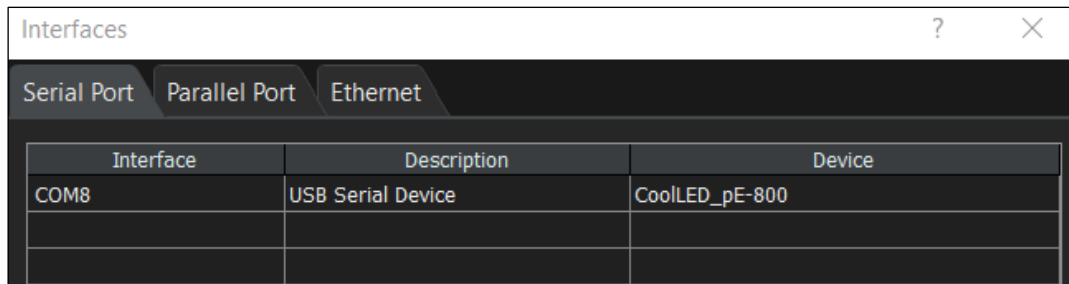

Figure 4: 'Interfaces'

4. Return to the Start screen and click 'Device Settings'. The Illumination System and shutter will now appear as below to be used in the customisation menu:
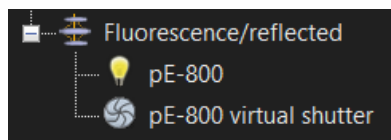

Figure 5: The pE-800 configured in 'Device Customization'

5   Examples of Software Functionality

5.1 Microscope Control (Manual)

Manual control of LED selection and intensity is achieved by using the 'Microscope Control' menu.

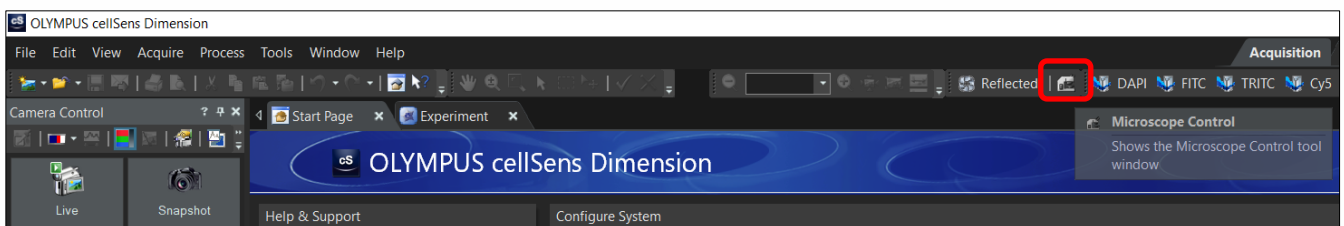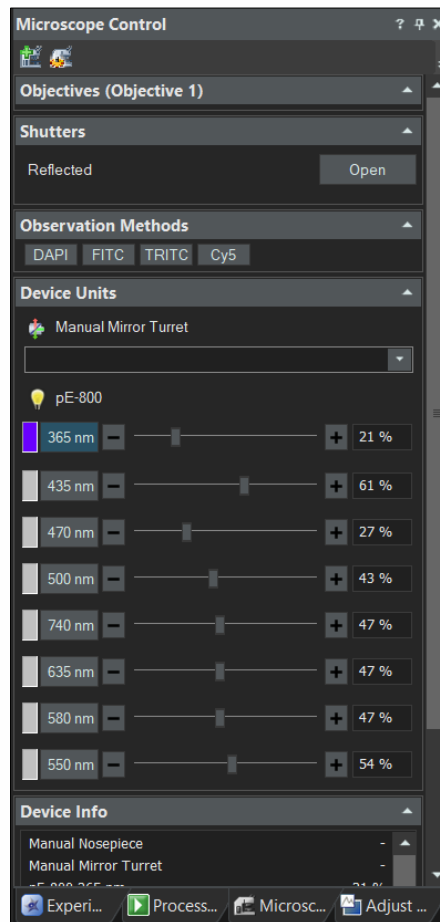1. Navigate to 'Microscope Control' in the tool bar.

Figure 6: Navigating to the 'Microscope Control' window from the toolbar (red box)

2. This opens the 'Microscope Control' window:

Figure 7: 'Microscope Control'

The figure is annotated with the following callouts:
- Open or close global shutter
- Select your configured 'Observation Methods' (see Section 5.2)
- Control selection and intensity of individual LEDs

Note:

- If using the pE-4000, it is not currently possible to achieve 'in-bank' switching: This means that it is not possible to use the USB to switch between wavelengths in the same pE-4000 channel (Such as 365 nm & 385 nm, or 460 nm & 500 nm).

5.2 Observation Methods

'Observation Methods' can be configured to allow quick access to frequently used LED settings. For example, the following steps show how to create an Observation Method for a few popular fluorophores.

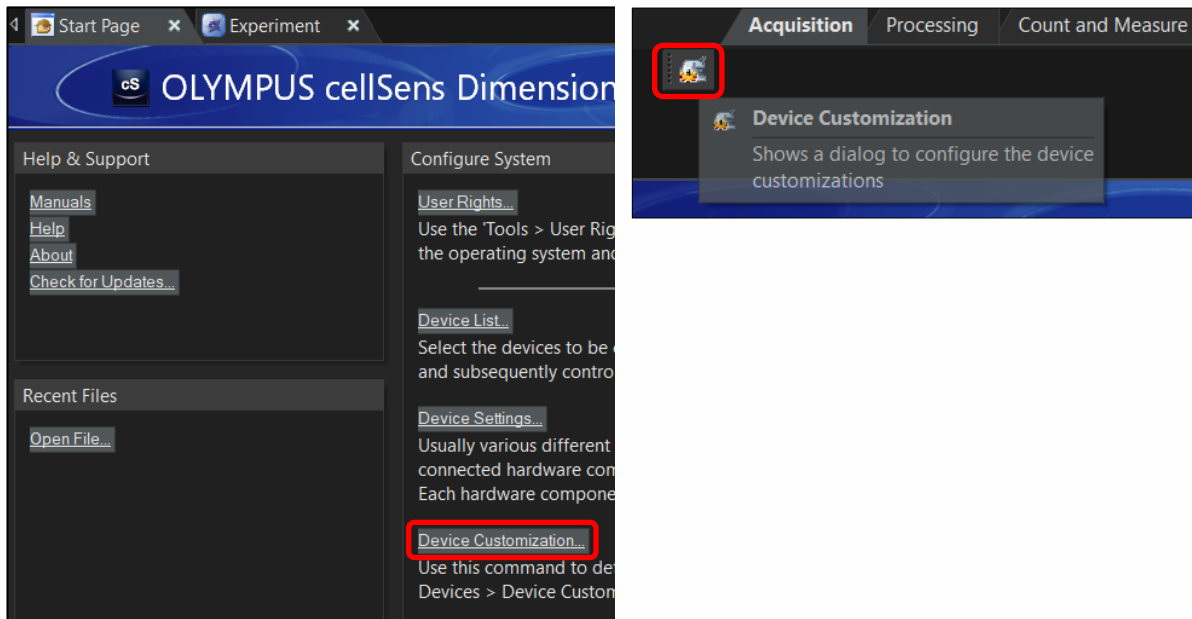1. Navigate to 'Device Customization' on the Start Page or the toolbar.

Figure 8: 'Device Customization' accessed either from Start Page (left, red box), or Toolbar (right, red box)

2. In the 'Device Customization' window, create and name new 'Observation Method' by clicking the icon in the top left corner (see Figure 9, red box), and enter a new name.
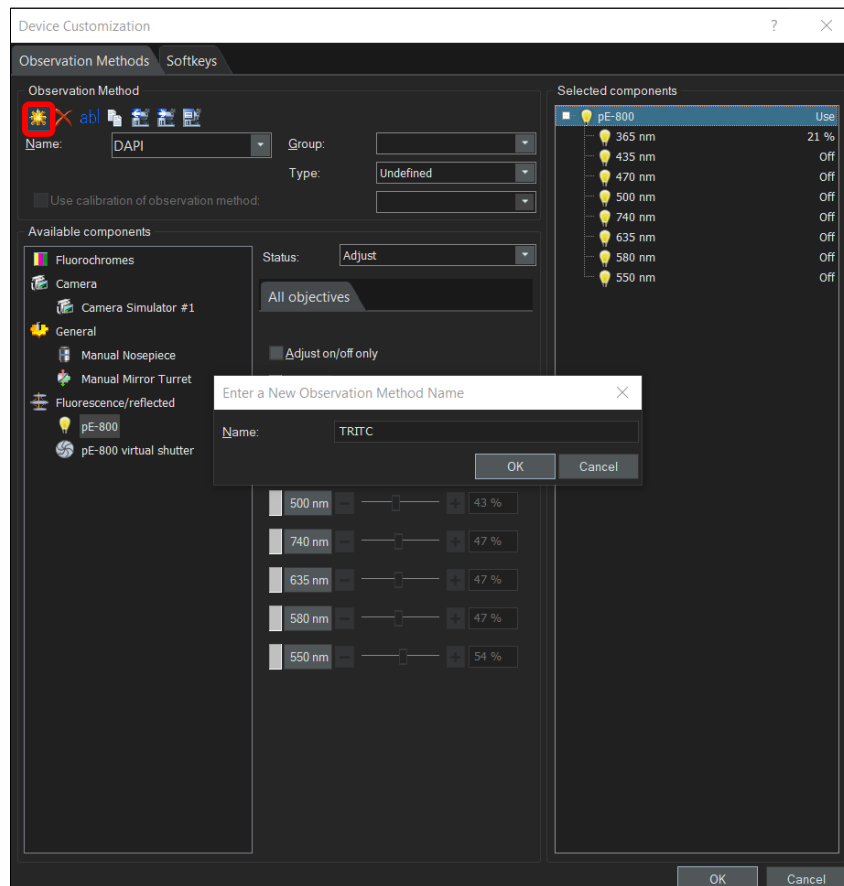
www.CoolLED.com

Figure 9: Creating and naming a new 'Observation Method' in the 'Device Customization' window

3. Assign the fluorochrome by selecting 'Fluorochrome' (blue box in Figure 10), selecting the relevant fluorochrome from the list.

4. Return to the 'Device Customization' window to configure the LED selection and intensity. First select the CoolLED Illumination System from 'Available components', and change status to "Adjust". It is now possible to select the desired LED(s) and intensity, which in this example for TRITC is the 550 nm LED at 30%.
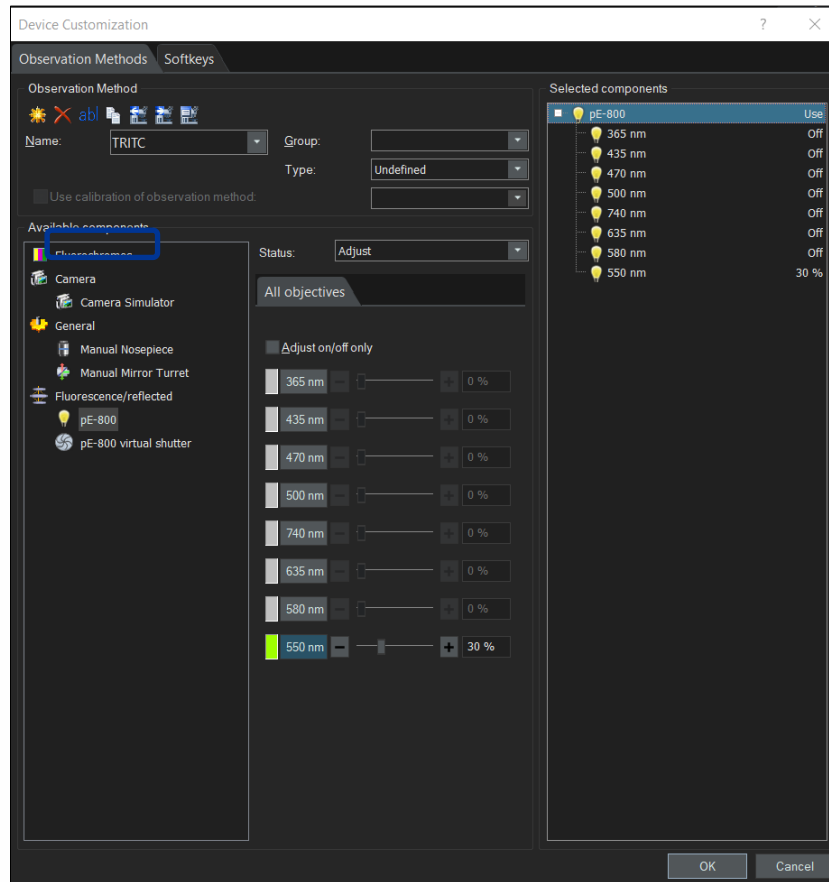
Figure 10: Configuring the new 'Observation Method' by selecting Fluorochrome (blue box) and adjusting LED selection and intensity

Note:

- There is no requirement to select 'Adjust on/off only
- The pE-4000 Illumination System has four channels with four LEDs within each bank. This is shown as a dropdown menu where one of the four LEDs can be selected per channel.
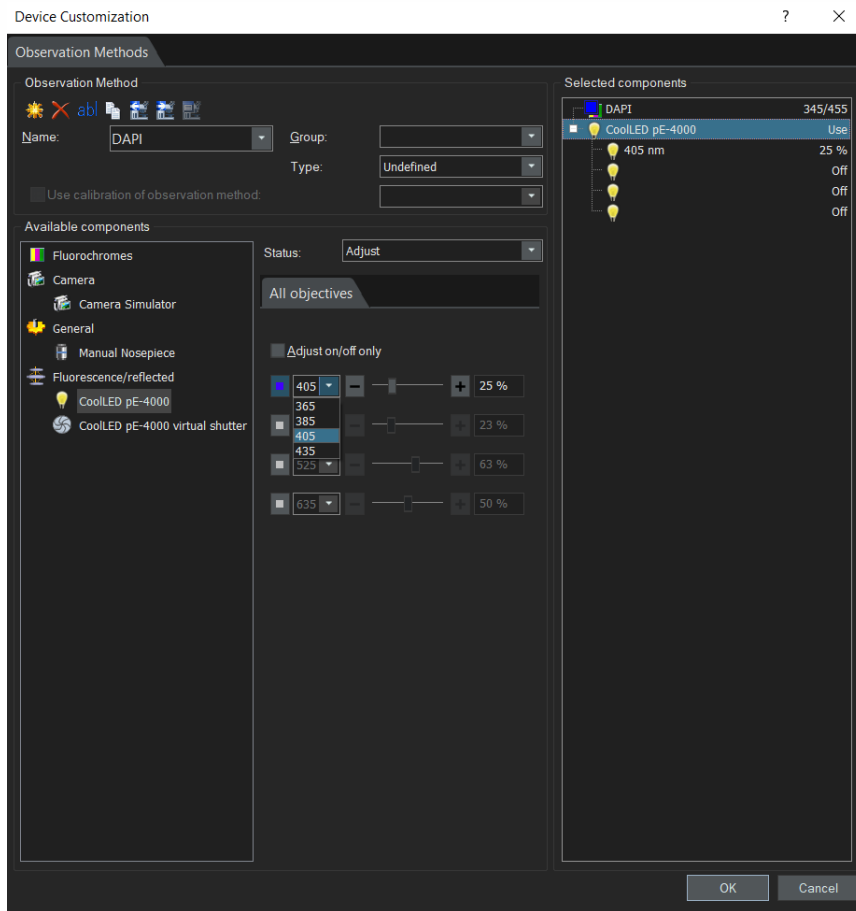
Figure 11: The pE-4000 has a dropdown to select one of four LEDs per channel

5. Configure the shutter: the shutter can be used as 'use for acquisition', which means that the LED(s) will be switched on when the camera is in live mode or when acquiring an image, but switched off when not acquiring. This is useful in several ways, such as protecting samples with reduced risk of phototoxicity and photobleaching.
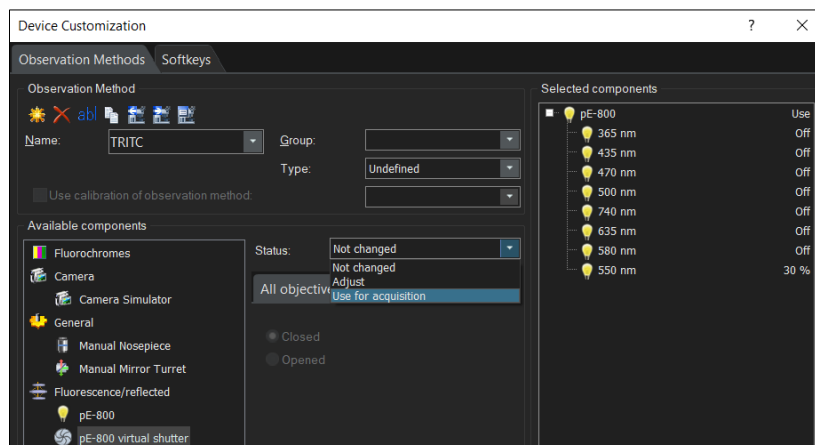

Figure 12: 'Device Customization', configuring the shutter

6. It is possible to set up several 'Observation Methods' as required, which can be selected from the toolbar (Figure 13), or the 'Microscope Control' window (Figure 7).
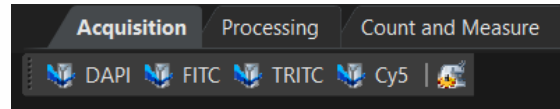

Figure 13: Several 'Observation Methods' visible along the toolbar

5.3 Experiment Manager

1. Navigate to the 'Experiment Manager' tab of the 'Microscope Control' window, and click 'New'.
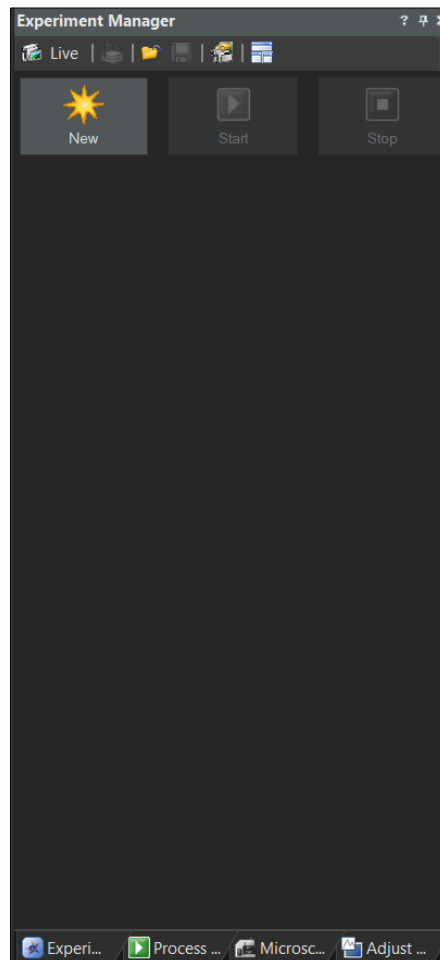

Figure 14: 'Experiment Manager' window

2. This opens the 'Experiment Manager' page. Click the 'Image Acquisition' dropdown to add Observation Methods, which can be added as a time-lapse (see Figure 15).
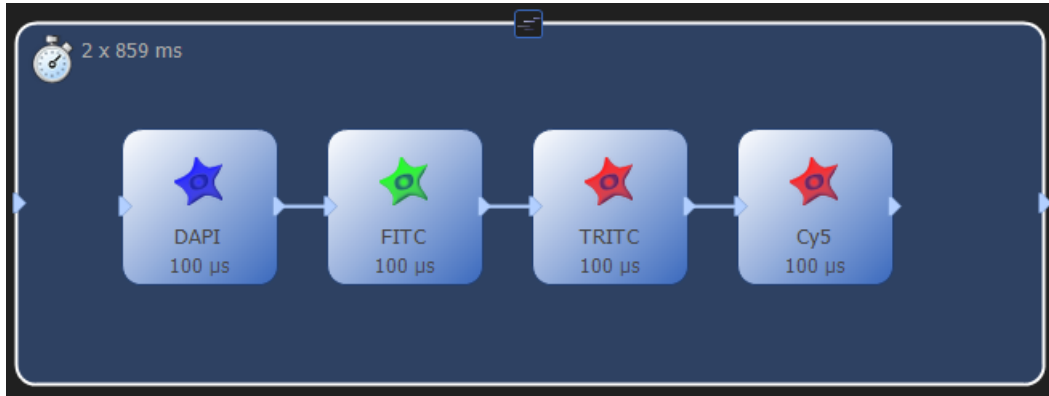

Figure 15: An example of a multi-channel time-lapse in 'Experiment Manager'

Note:

- Other methods can also be created separately and then saved and reloaded. For example, if 385 nm/490 nm/525 nm was needed for a different experiment, this method could be saved as well. These template methods can be used to speed up the day-to-day setting up of experiments.

For more information, please refer to cellSens help guide or manual. For questions regarding CoolLED Illumination Systems, please contact info@coolled.com.