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HCImage

CoolLED pE-4000
Universal Illumination System

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COOLLED PE-4000

The CoolLED pE-4000 has 16 selectable LED wavelengths ranging from 365 nm to 770 nm, that can be matched to the filters and fluorophores of almost any microscope. Precise intensity control of selected LED wavelengths in 1% steps (0–100%). The pE-4000 does not require shutters, the LEDs provide instant on/off and there isn't a warm up or cool down period.

Wavelength Grouping

The pE-4000 provides 16 selectable wavelengths arranged in 4 channel groups, which allows for matching with available dual, triple and quad filter sets. Each channel can be individually controlled, both in terms of intensity and wavelength switching. This allows for up to a simultaneous 4 wavelength excitation, one wavelength per channel.
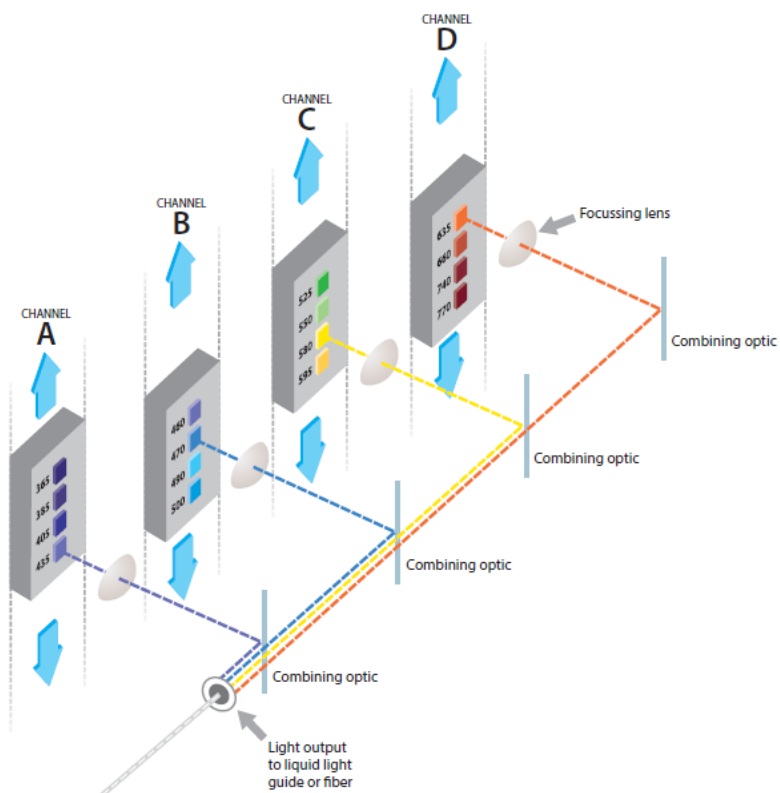


pE-4000 Selectable Wavelengths

Channel A	Channel B	Channel C	Channel D
365 nm	460 nm	525 nm	635 nm
385 nm	470 nm	550 nm	660 nm
405 nm	490 nm	580 nm	740 nm
435 nm	500 nm	595 nm	770 nm

Note: The LEDs are grouped so that any chosen combination of four will have a wavelength selected from one of 4 separate groups in order to prevent the excitation and emission spectra from overlapping.

CoolLED Driver

For USB operation, the CoolLED Driver is required for setting up the 2 virtual COM ports used by the pE-4000. Copy and unzip the CoolLED-pE-inf.zip to a folder on the desktop. Contact CoolLED if you do not have a copy of the driver.

1. Turn on the pE-4000, let it initialize and then connect the USB cable to the computer.
2. The Windows Driver installation will fail, go to the Device Manager, right-click on **My Computer**, select **Manage** and select **Device Manager** in the System Tools list.
3. Go to **Other Devices**, right-click on **USB Virtual Serial Port A**, select **Update Driver Software...** and choose **Browse my computer for driver software**.
4. Point to the **CoolLED-pE-inf** folder on the desktop, click **Next** and allow Windows to install the driver.
5. The pE-4000 is now listed under **Ports (COM & LPT)** as **CoolLED pE-4000 USB Virtual Serial Port A (COM#)** with an assigned COM port number.
6. Go to **Other Devices**, right-click on **USB Virtual Serial Port B** and repeat the steps to update the driver for this COM port.
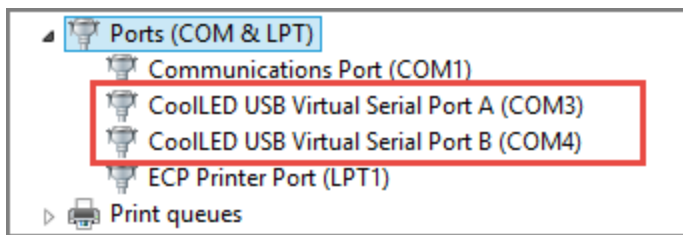

Add pE-4000 to a Profile

The next step is to add the pE-4000 as an IO/LED Device to a profile in HCImage.

1. Launch HCImage, go to **File** and select **Current Profile**. In the **Device Control** tab, select **IO/LED Devices** and click **Add**.
2. Select **CoolLED precisExcite** from the list, go to the **COM-Port** tab and select the COM # assigned by Windows.
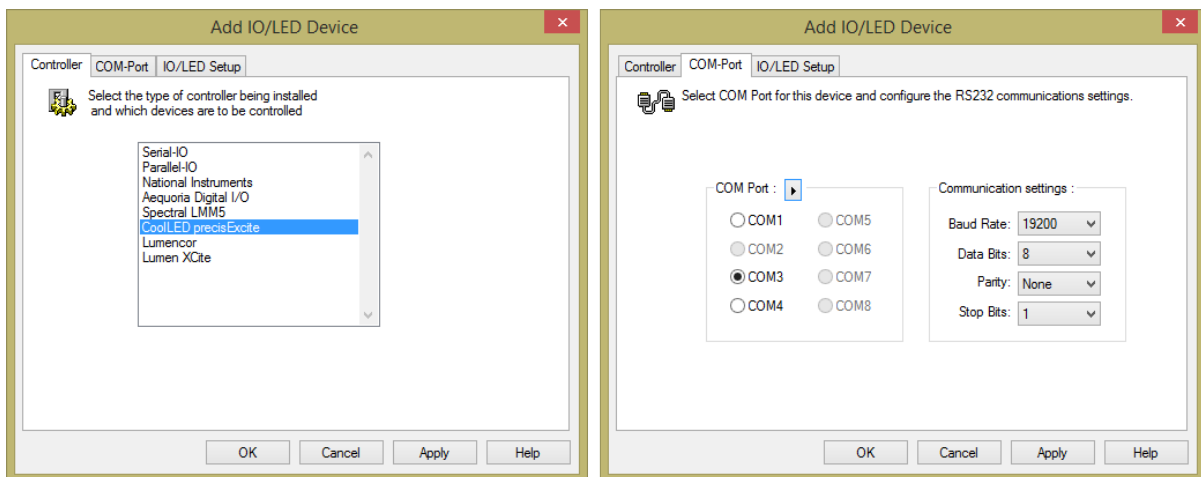
3. Click **OK** to return to the Current Profile. The pE-4000 is now listed as a the CoolLED-pE under IO/LED Devices. Click **OK** to save the device settings to the profile and close the window.
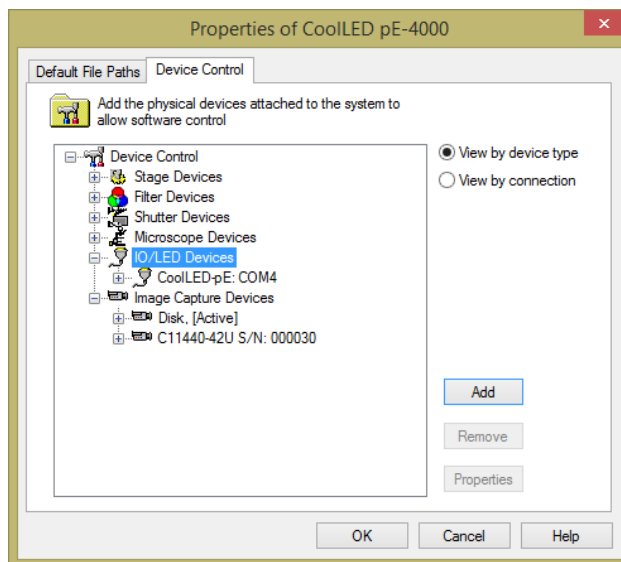
4. Go to the **Devices** pane and expand the **Filter Setup** panel to define filter groups. Click on the **IO/LED Device** tab to access the filter and shutter controls for the pE-4000.

Channel Wavelength
Each channel has 4 wavelengths to choose from

Channel Intensity
Set the intensity 0-100% (1% steps) for the selected wavelength

Shutter Controls
Set the shutter state to Low (Closed), High (Open) or Don't Care (Ignore)

Filter Setup Examples

Follow the steps below to configure the channel settings for pE-4000.

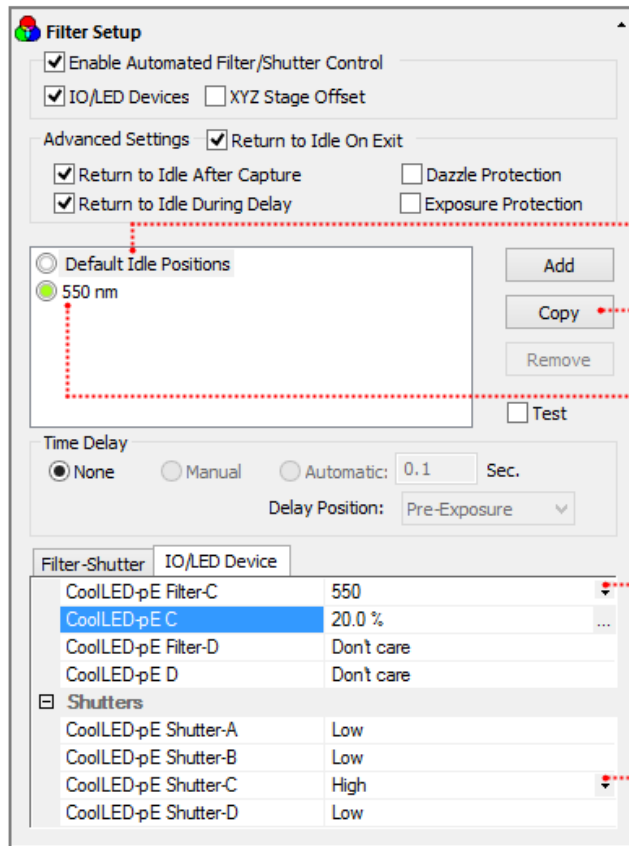### Part 1 - Filter Setup for Default Idle Positions

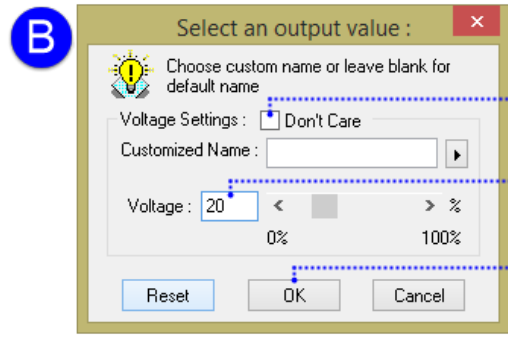|		
1	**Automated Control**	Enable IO/LED Device control
2	**Advanced Settings**	Enable Return to Idle On Exit, Return to Idle After Capture and Return to Idle During Delay
3	**Filter Group**	Select Default Idle Positions
4	**IO/LED Device Controls**	Select to display IO/LED Device controls
5	**Shutter Controls**	Set the shutter state to Low for Shutters A-D

Part 2 - Filter Setup for 550 nm

1 Filter Group
Select Default Idle Positions

2 Copy Filter Group
Click Copy, enter 550 nm and click OK

3 Filter Group
Right-click on 550 nm, select Customize from the tint list and follow the instructions for **A** below to create a custom tint

4 Filter Controls
Set Filter C to 550, select C, click the ellipses and follow the instructions for **B** below to enter the intensity value

5 Shutter Controls
Set Shutter C to High (Open)

A Customized Contrast Tint List
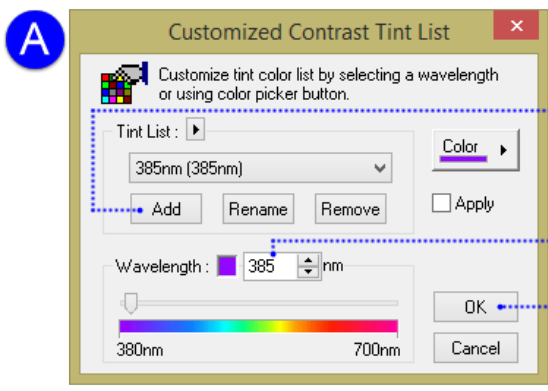
1 Add Custom Tint
Click Add, enter the tint name and click OK

2 Tint Wavelength
Enter the wavelength

3 Save Settings
Click OK

B Select an output value :

1 Enable Voltage Settings
Deselect Don't Care

2 Intensity
Enter the intensity 0-100%

3 Save Settings
Click OK

Part 3 - Filter Setup for White Light

White Light Settings

Channel	Wavelength	Intensity %	Shutter
A	365 nm	20%	High
B	470 nm	20%	High
C	550 nm	20%	High
D	635 nm	11%	High