OPTOSCAN µMANAGER

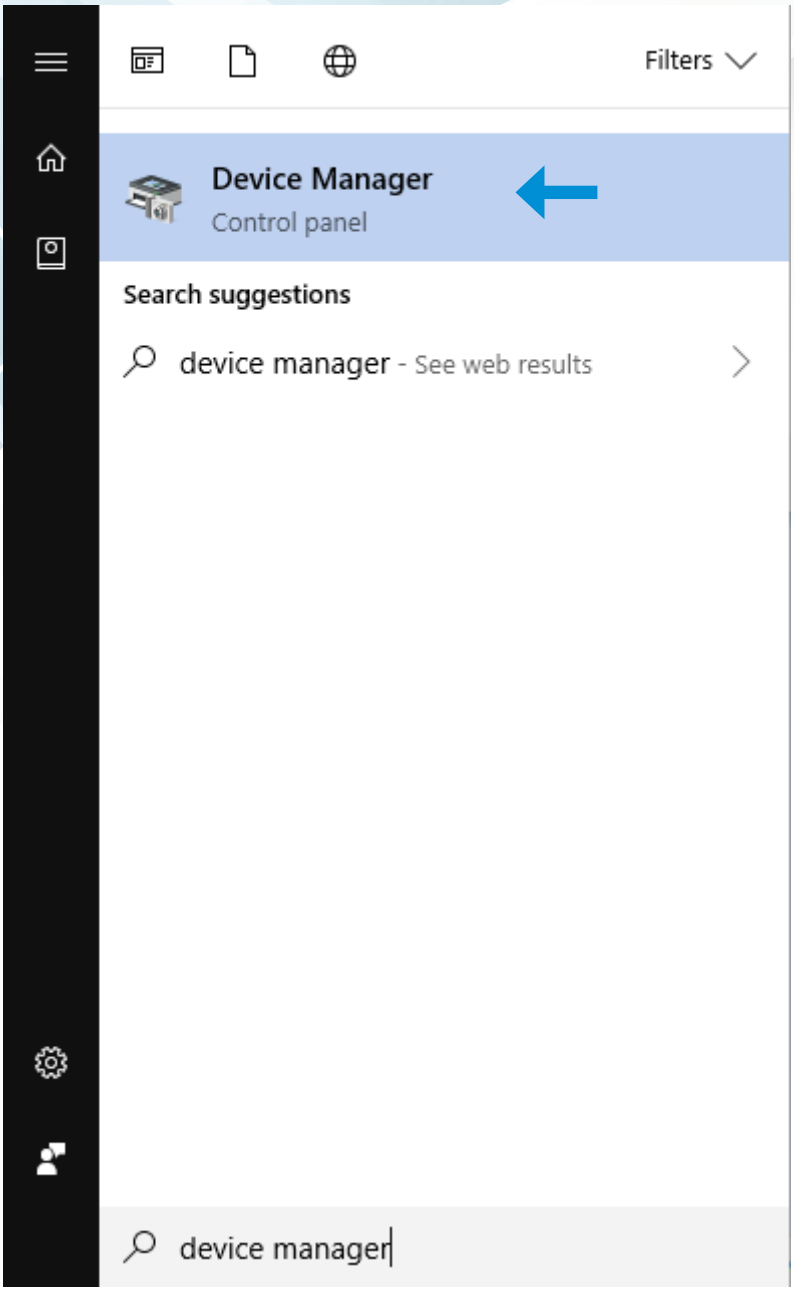
Setting up a Cairn OptoScan in µManager

This guide details how to install and configure the Cairn OptoScan via USB drivers in MicroManager.
For the purpose of this guide the install is on Windows 10 and using MicroManager Version 2.0 Beta

A) Installing the OptoScan USB drivers in Windows

Connect all hardware and turn on the OptoScan power supply. Please make sure the 68w cable between the monochromator and the power supply is connected to the "USB Monochromator" connection.

The OptoScan driver will need to be installed manually.
To do this, click on the Start Menu, search for and open 'Device Manager'



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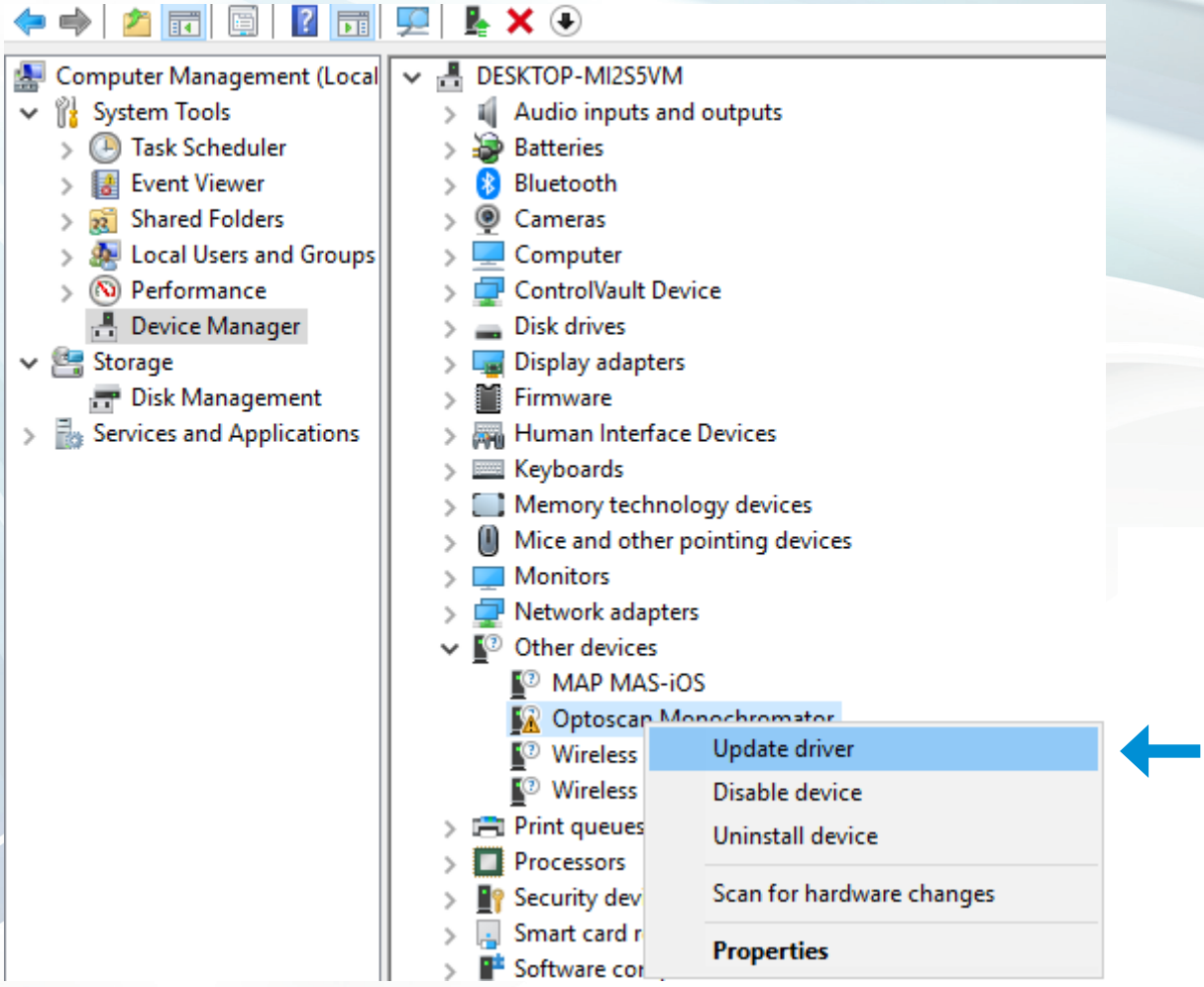
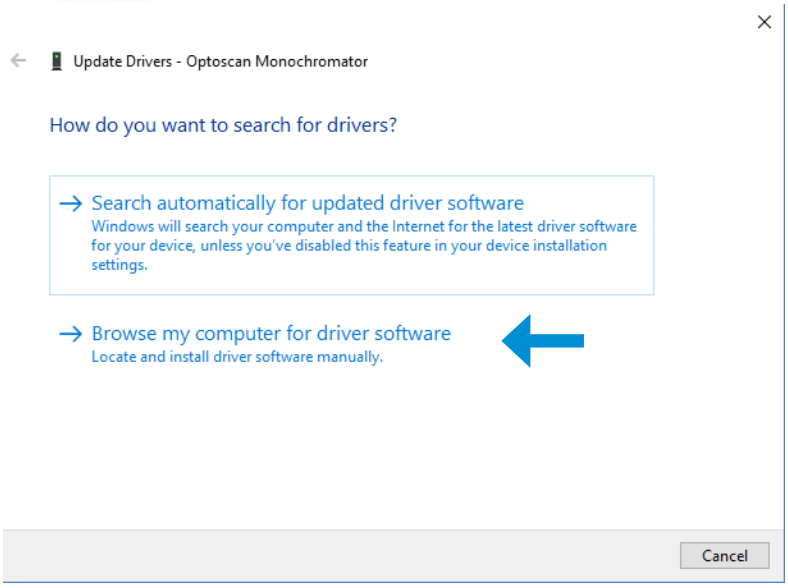
The required USB drivers will be included with your order on a Cairn USB stick.
Alternatively, these can downloaded from the Software Support page on our website:
https://www.cairn-research.co.uk/support/software/

The files will be in a .zip archive and will need to be extracted.

In Device Manager under 'Other Devices' you will see the Cairn OptoScan Monochromator, right click and "Update Driver"

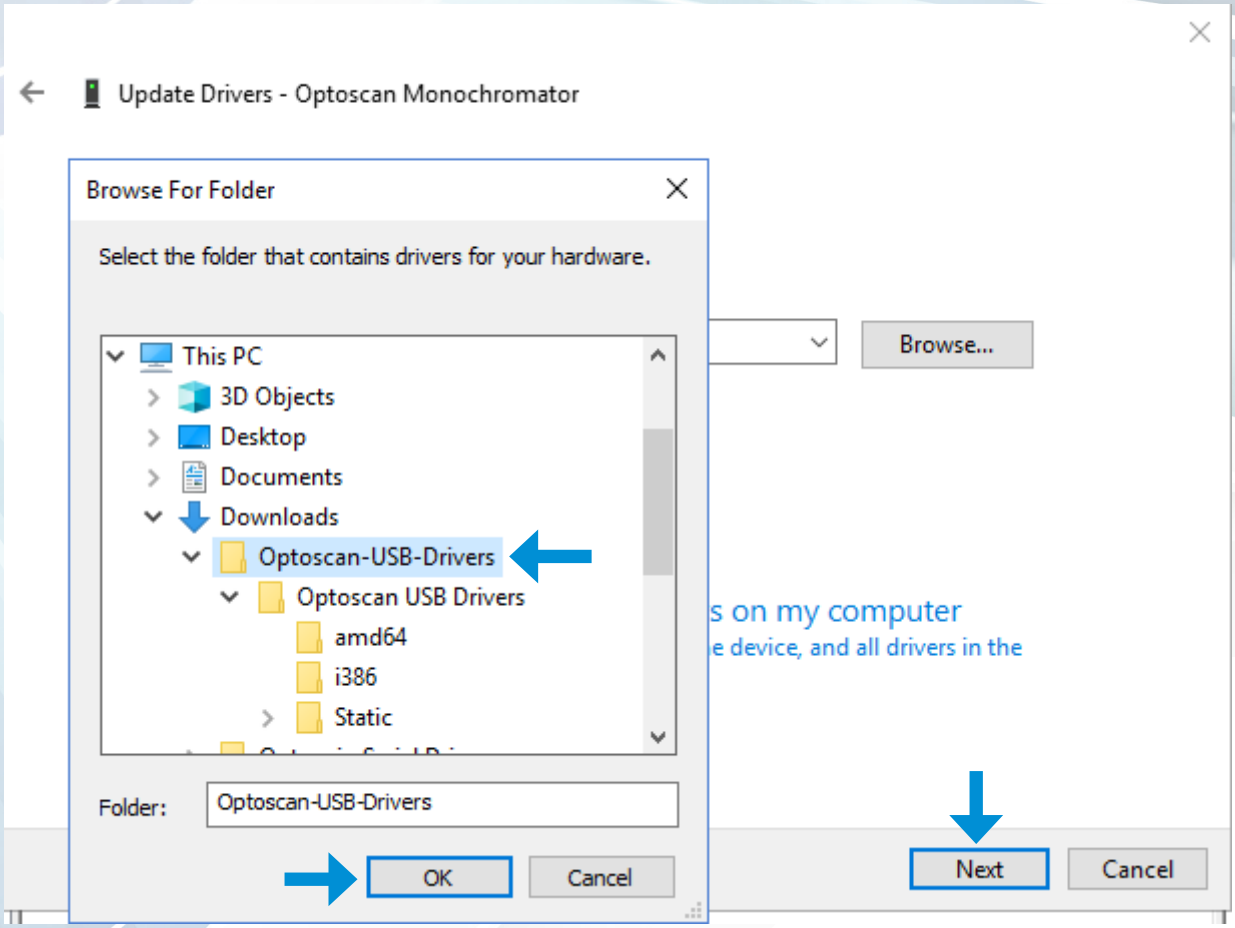


Choose "Browse my computer for driver software"

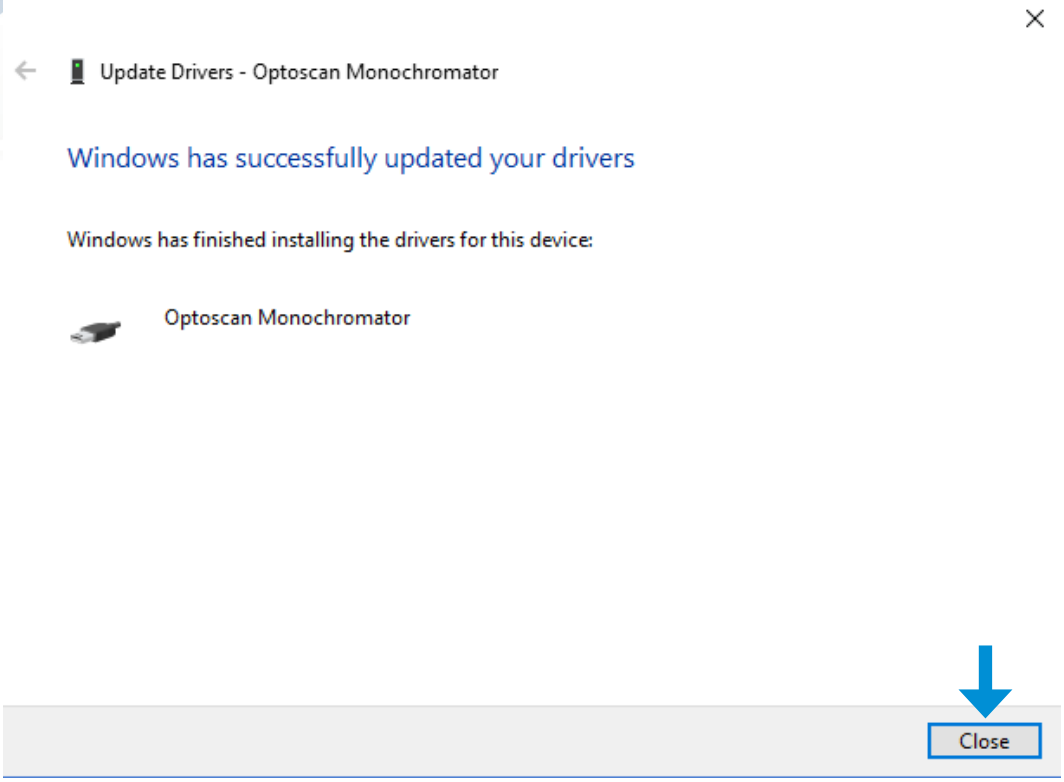


Locate the “OptoScan-USB-Drivers” folder you extracted earlier.

Press “OK” and then “Next” and wait for the driver to install.



Then “Close”



B) Testing the OptoScan in osDac

On the provided memory stick, you will see a folder called osDac "1.32-Nov-18", this can be extracted into :

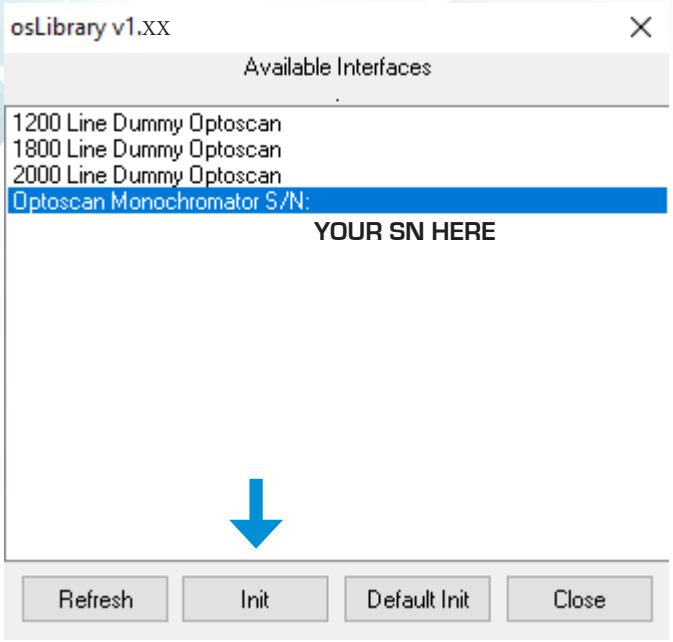
C:\Program Files\

Once extracted, right click on the osDac icon and create a shortcut on your desktop.

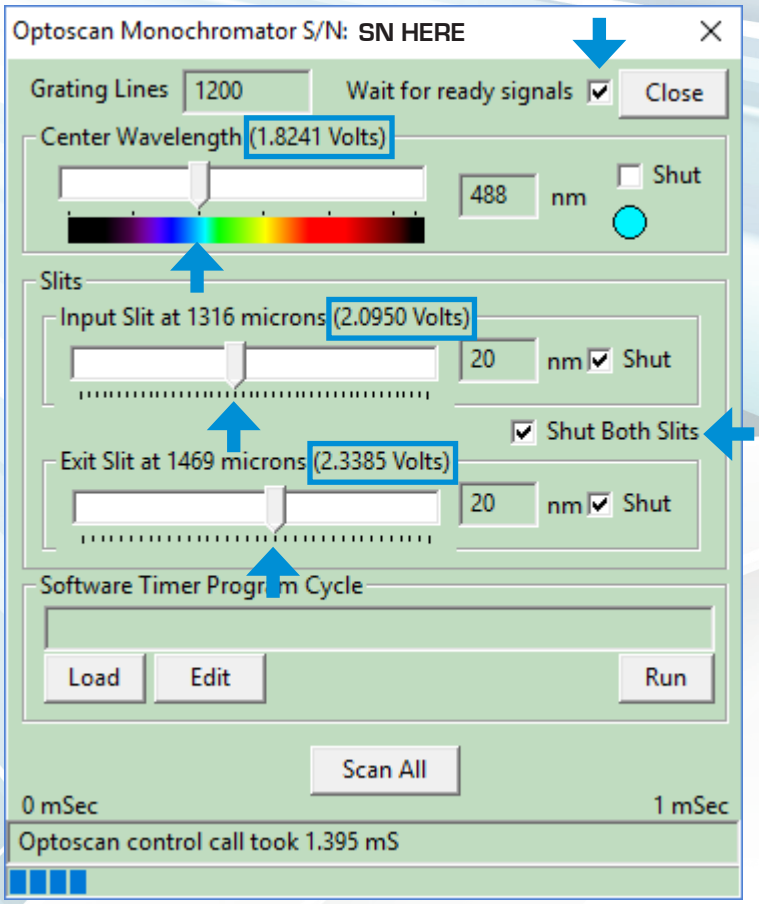
Find osDac and Run it, you will see a list of interfaces.

The "1200, 1800, 2000 Line Dummy OptoScan" interfaces are used to calculate the voltages for various parameters if you are using an external interface such as a Cairn Data Interface.

Please select your SN:XXXX from the list and hit "Init" for USB control. You should hear the software engage with the OptoScan, causing the shutter to click.



The three sliders in the osDac software can be adjusted to change the Wavelength, Input and Exit bandwidths.



Ensure wait for ready signals is ticked.

Wavelength selection typcially 300-700nm

Bandwidth 0-30nm

Bandwidth 0-30nm

The sliders will adjust those parameters and display a voltage that can be keyed into a Data Interface for external control.

When a bandwidth has been applied to the input and exit slits, the unit will shutter when 'Shut Both Slits' is toggled.

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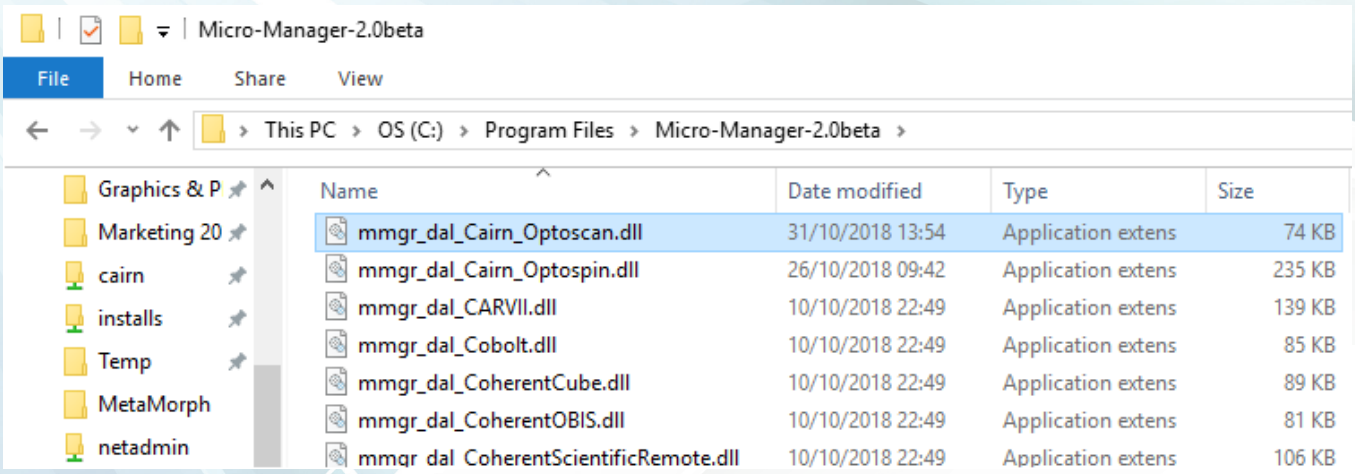
C) Hardware installation into MicroManager

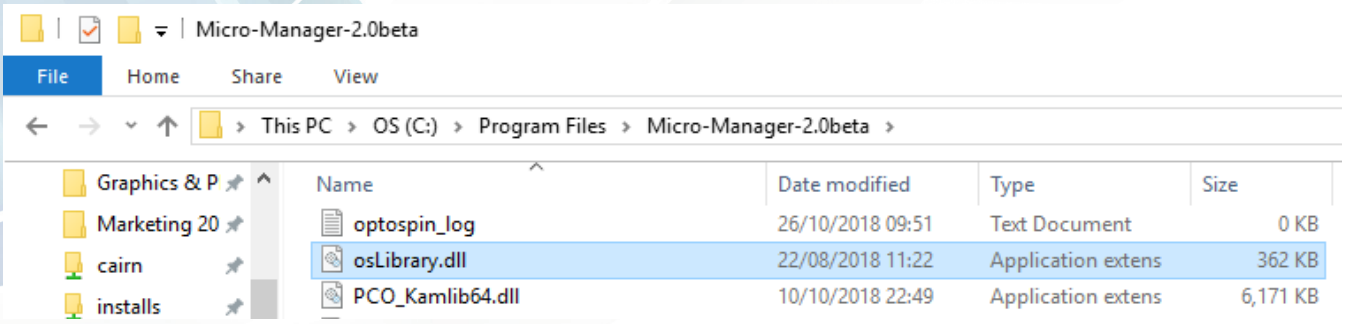
Install MicroManager with default application settings into the usual C:\ Program Files directory and complete installation.
If MicroManager opens, close the application down and move onto the next step below.

Please note: the driver files are verson specific and compiled for a certain build of MicroManager
Using the files from the memory stick or files downloaded from the Cairn website;

Copy:
mmgr_dal_Cairn_Optoscan.dll AND osLibrary.dll

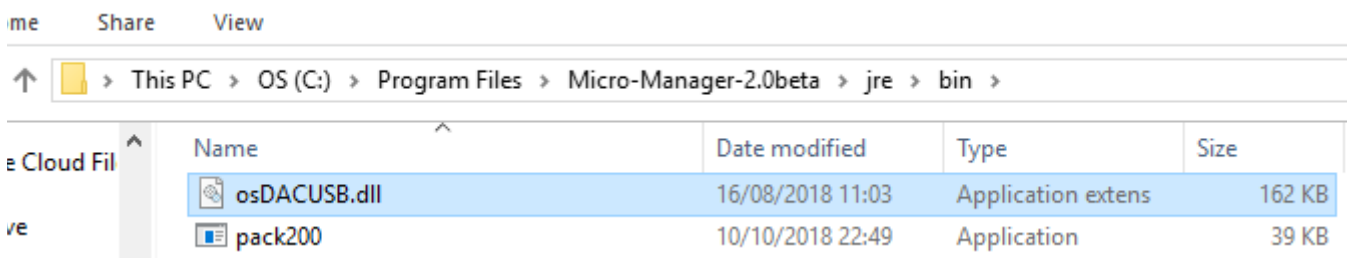
Into the directory of your MicroManager installation which is typically:
C:\Program Files\Micro-Manager-2.0beta





Copy:
osDACUSB.dll

Into a different folder in the MicroManager directory:
C:\Program Files\Micro-Manager-2.0beta\jre\bin



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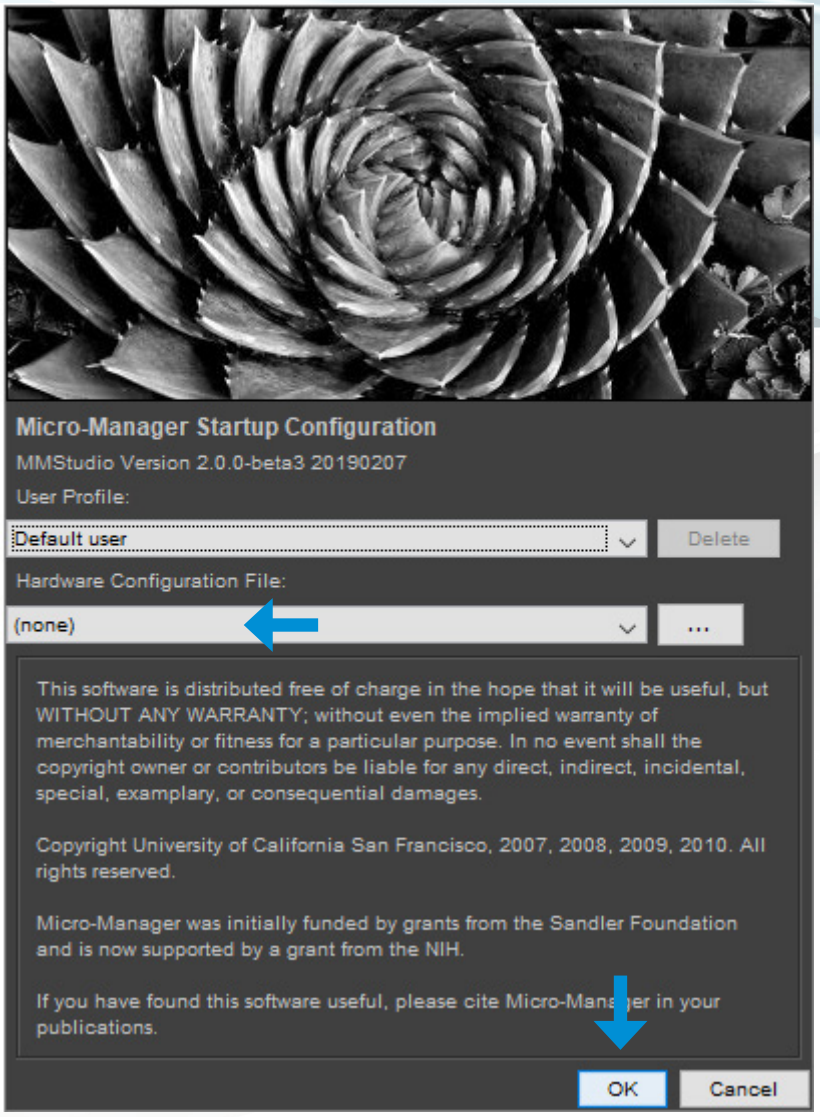
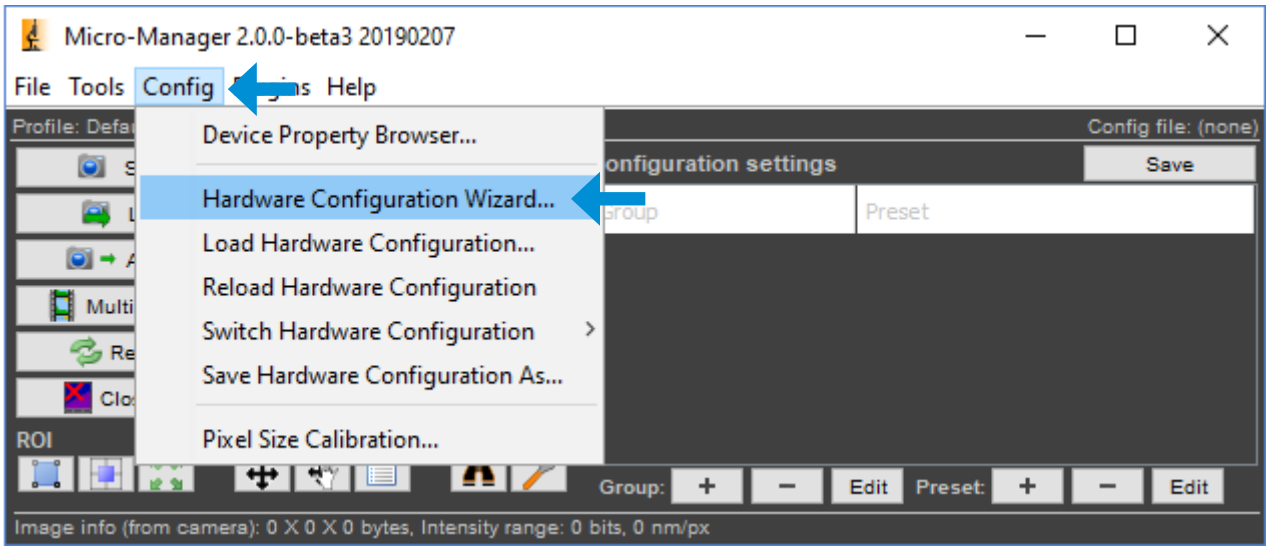
D) Installing the USB OptoScan Monochromator in MicroManager

Check all cables for the Monochromator are connected and switch on the equipment.

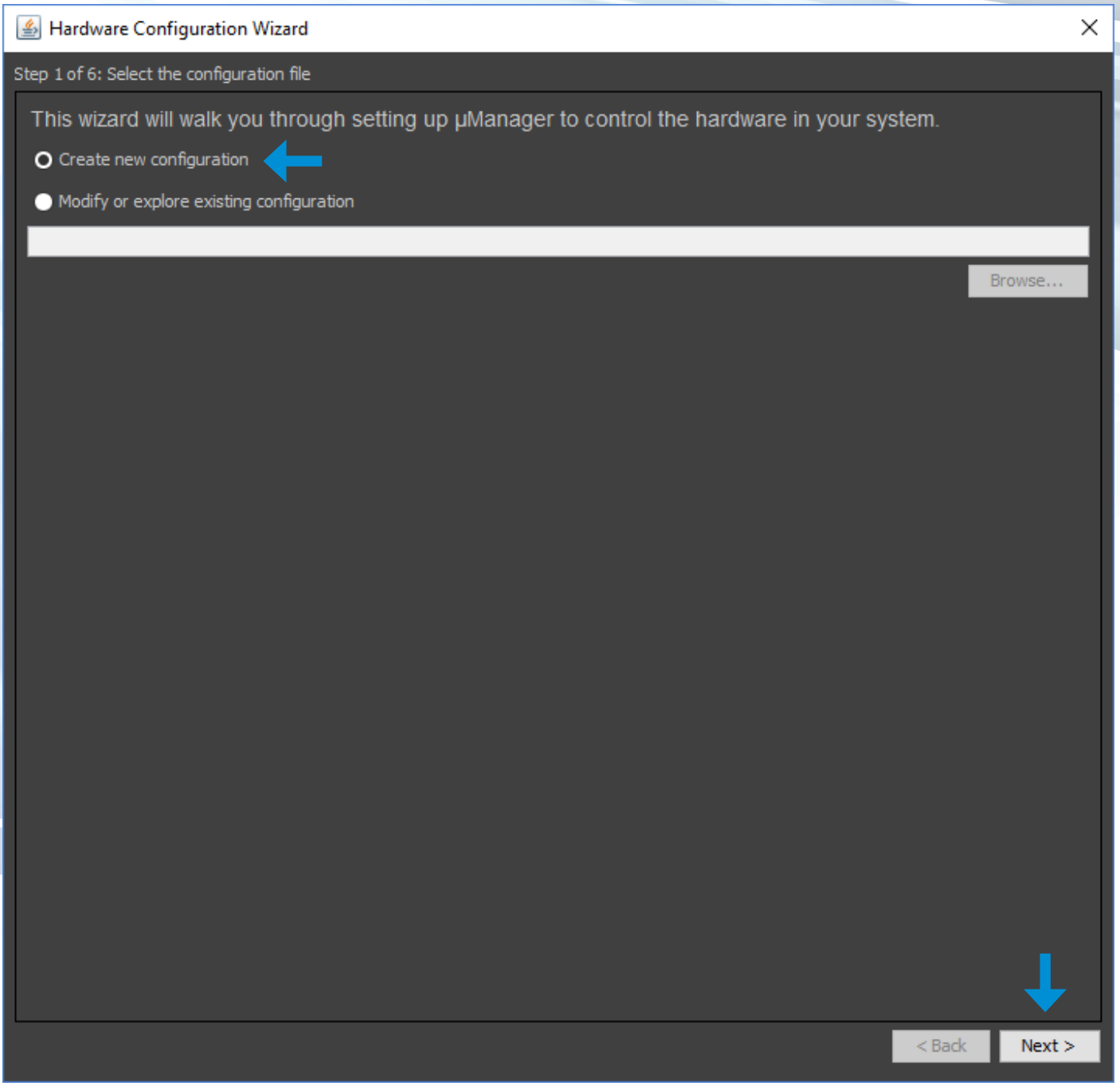
Open MicroManager and set the “Hardware Configuration File” to “None” and press OK.



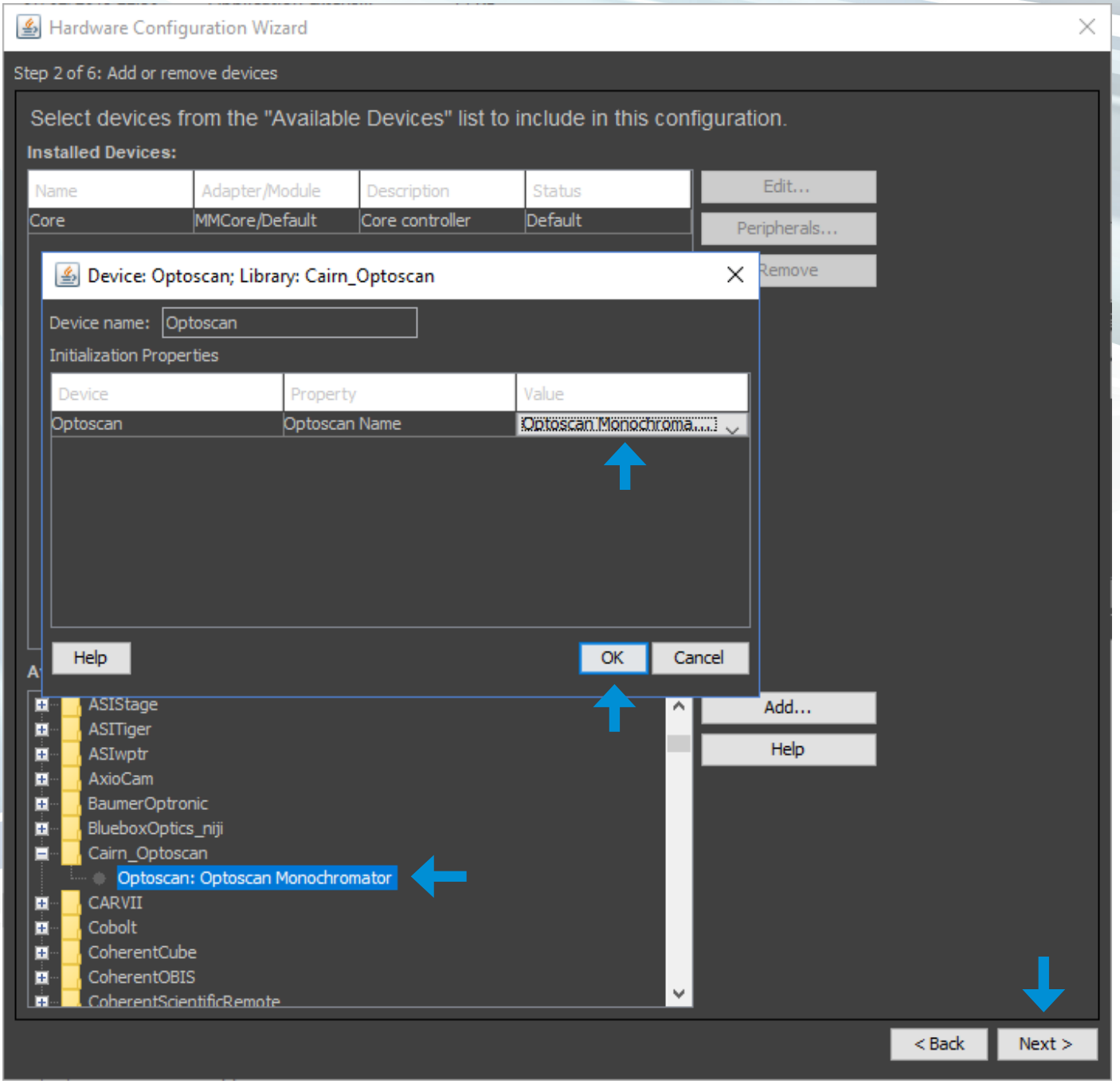
Navigate to the Config tab at the top and select “Hardware Configuration Wizard”



Check “Create new configuration” and press “Next”

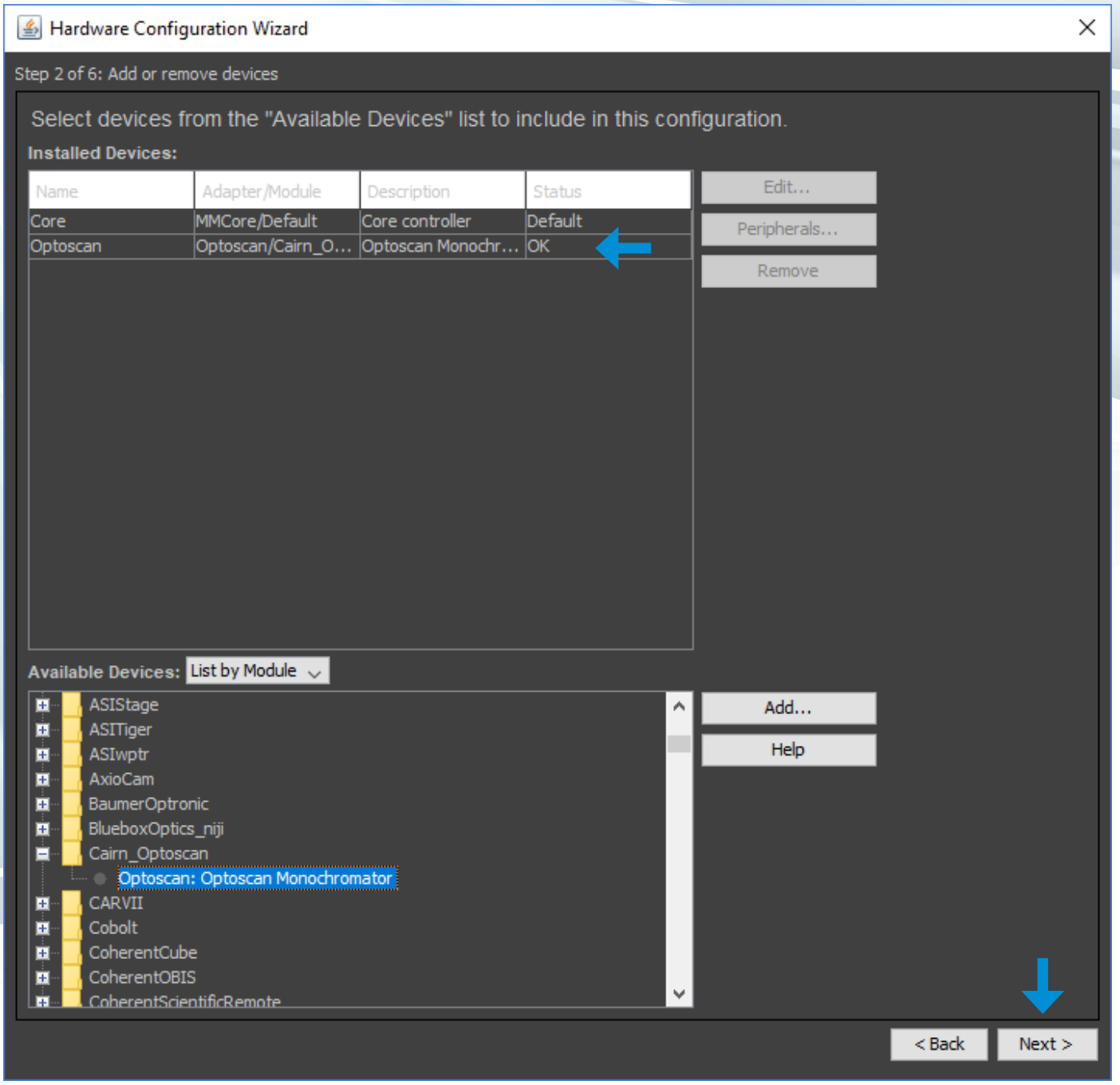


In the hardware list, scroll down until you find “Cairn_Optoscan”, expand this select ‘Optoscan: Optoscan Monochromator’ and press “Add”. A new box will appear and under ‘Value’, click the box so the SN of the OptoScan is displayed.



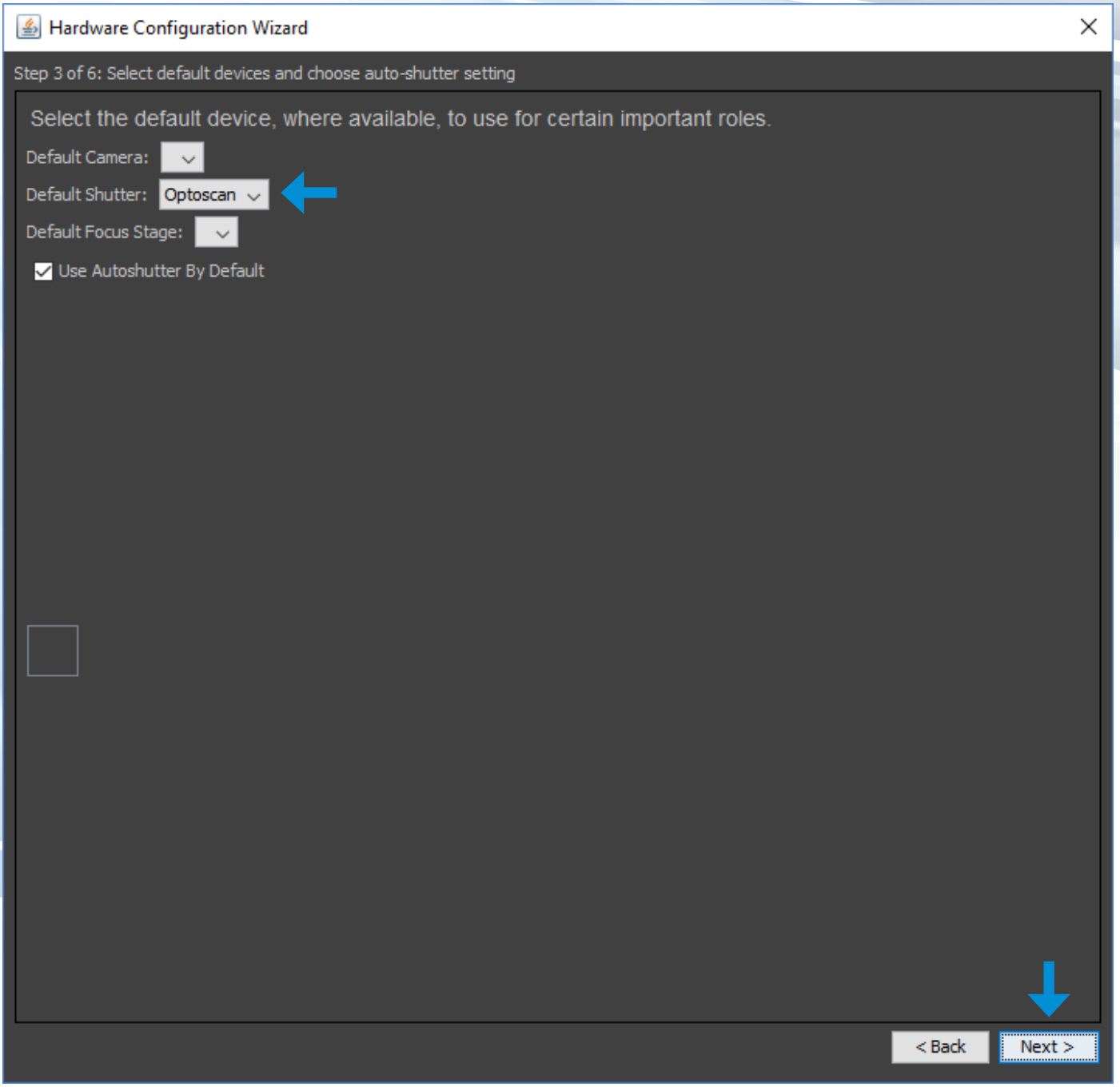
Click “OK” and “Next”

The Optoscan will show in the 'Installed Devices' list, 'OK' shows the unit has installed successfully.

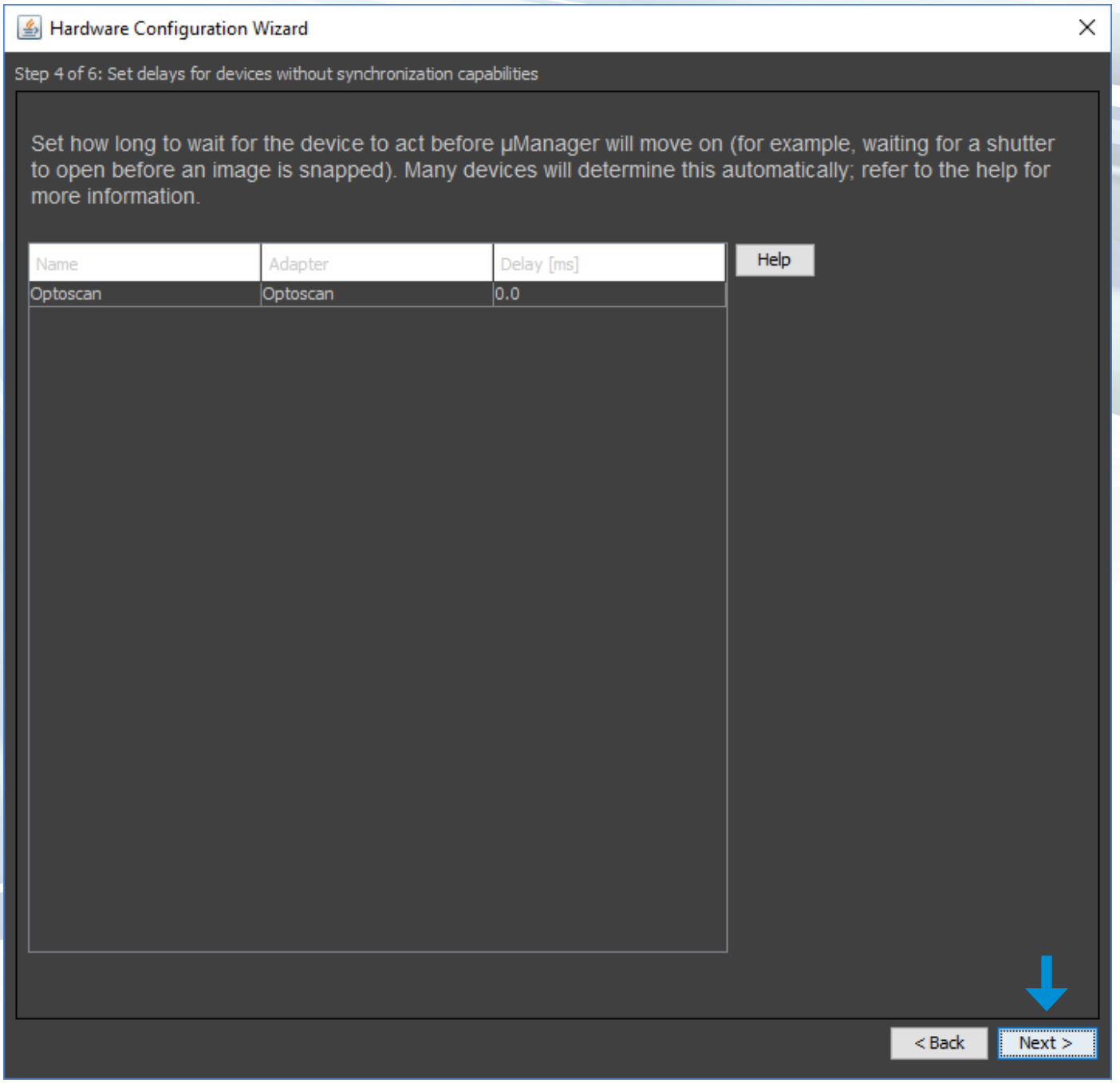


Click "Next"

The “Defualt Shutter” will be displayed as OptoScan.

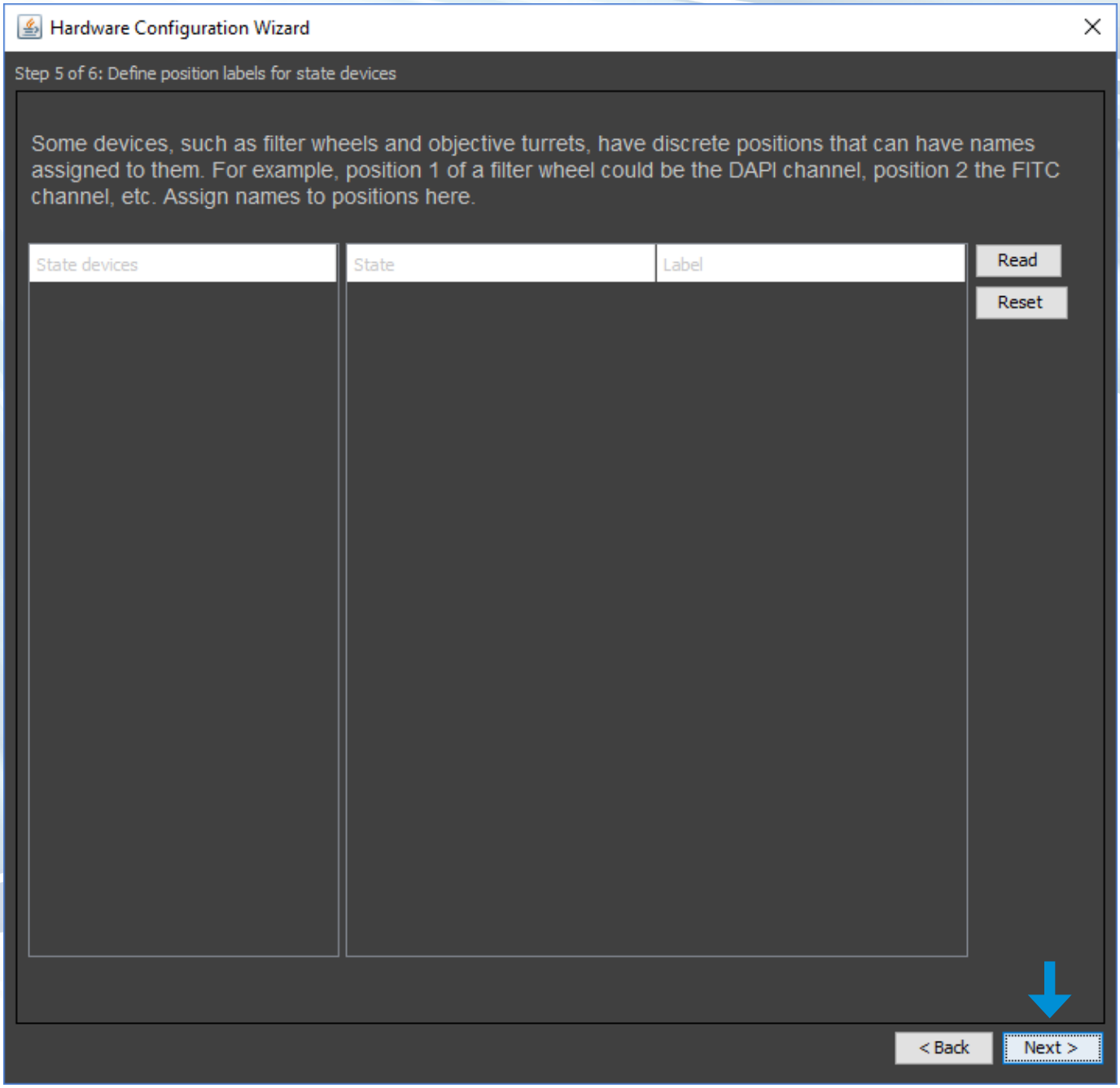


Click “Next”



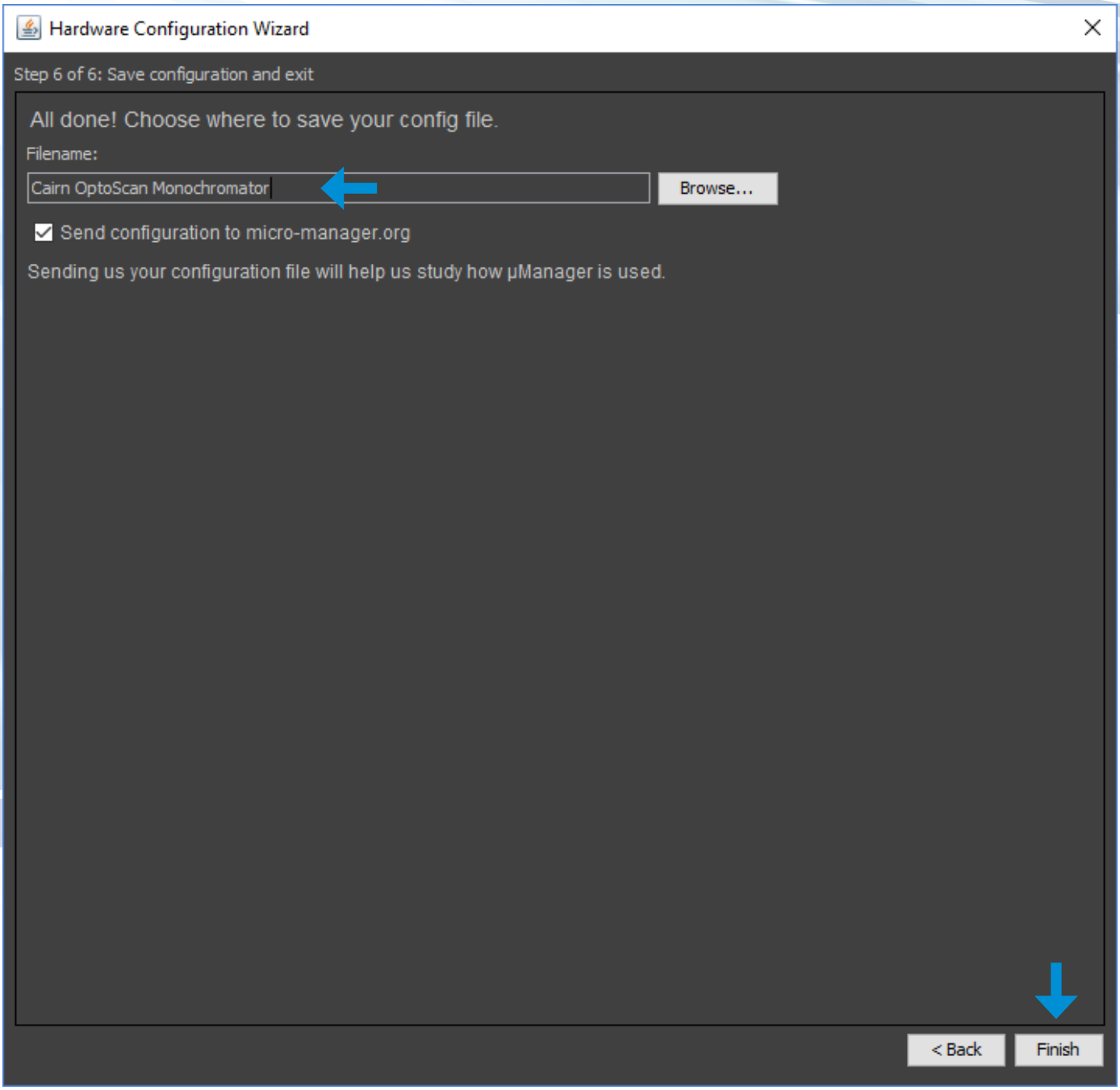
* *Optional. A delay of 5ms can be applied, although the OptoScan switches positions in <2ms, so no delay is normally required.* *

Click “Next”


Hardware Configuration Wizard
Step 5 of 6: Define position labels for state devices
Some devices, such as filter wheels and objective turrets, have discrete positions that can have names assigned to them. For example, position 1 of a filter wheel could be the DAPI channel, position 2 the FITC channel, etc. Assign names to positions here.
State devices
State
Label
Read
Reset
< Back
Next >

Click “Next”

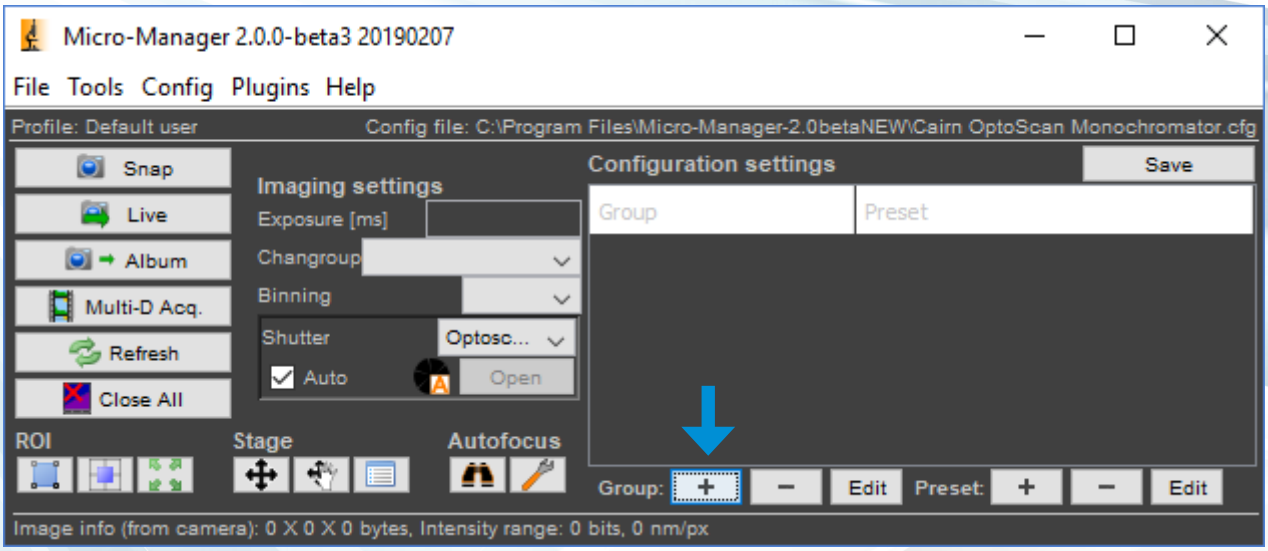
The config file will need to be given a name, for the purpose of this guide it is named “Cairn OptoScan Monochromator”



Click “Finish”

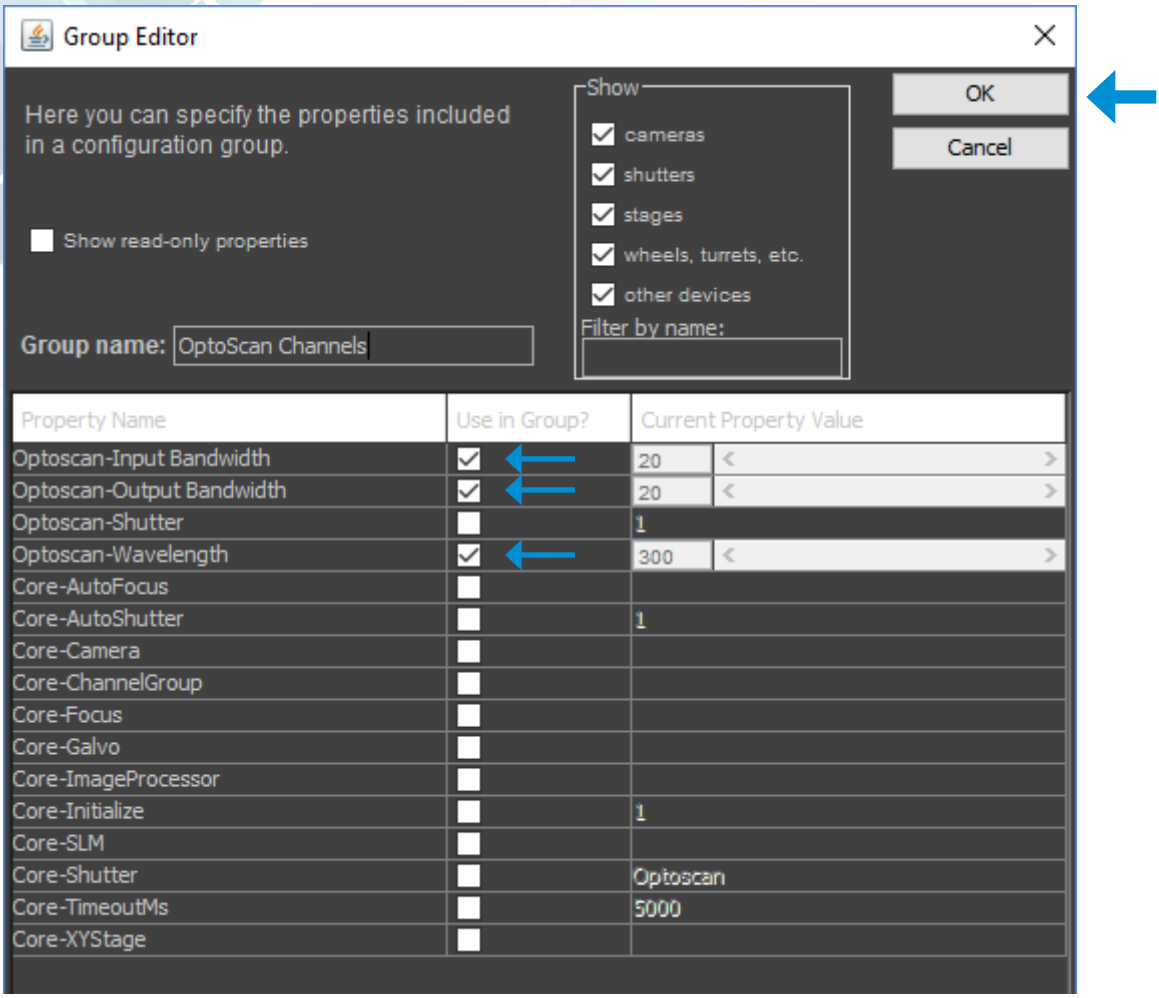
E) Add illumination settings for each of your required fluorophores

Add a new Group within Configuration Settings.

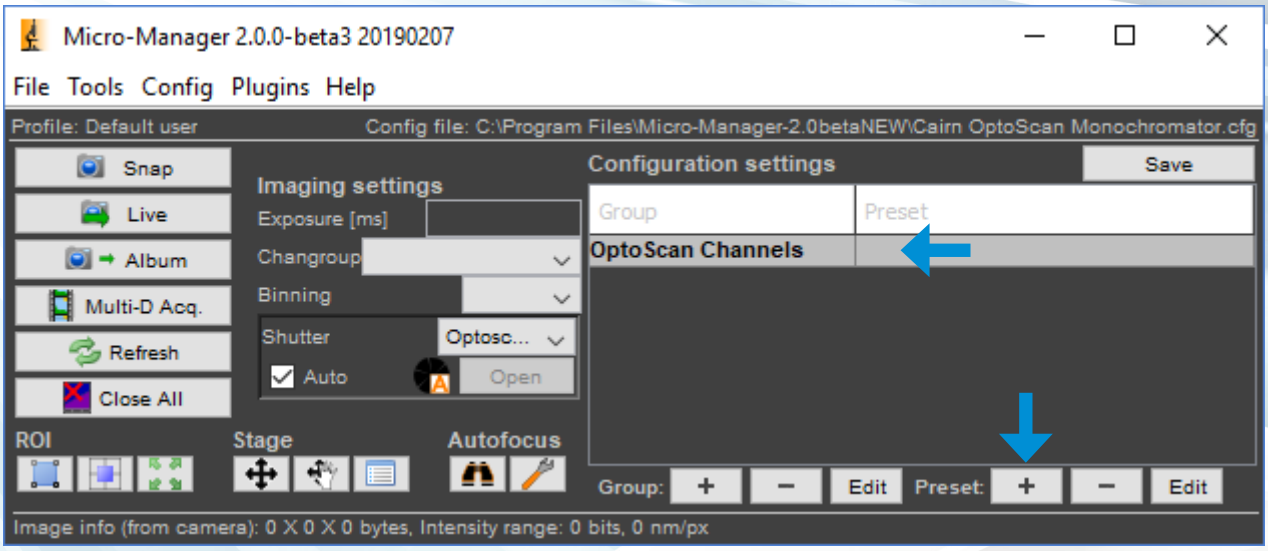


In the Group Editor window, select Optoscan-Input Bandwidth, Optoscan-Output Bandwidth & Optoscan-Wavelength

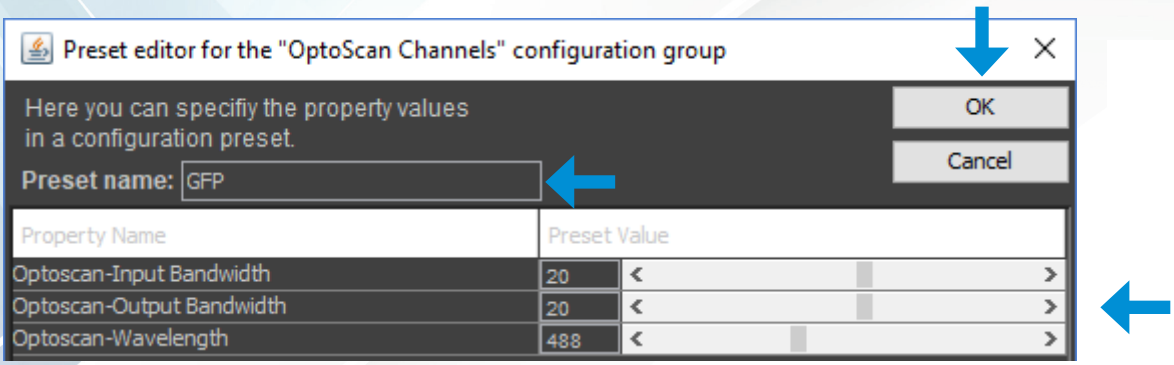
Give the Group a name, for the purpose of this guide it is named “OptoScan Channels”, press “OK”



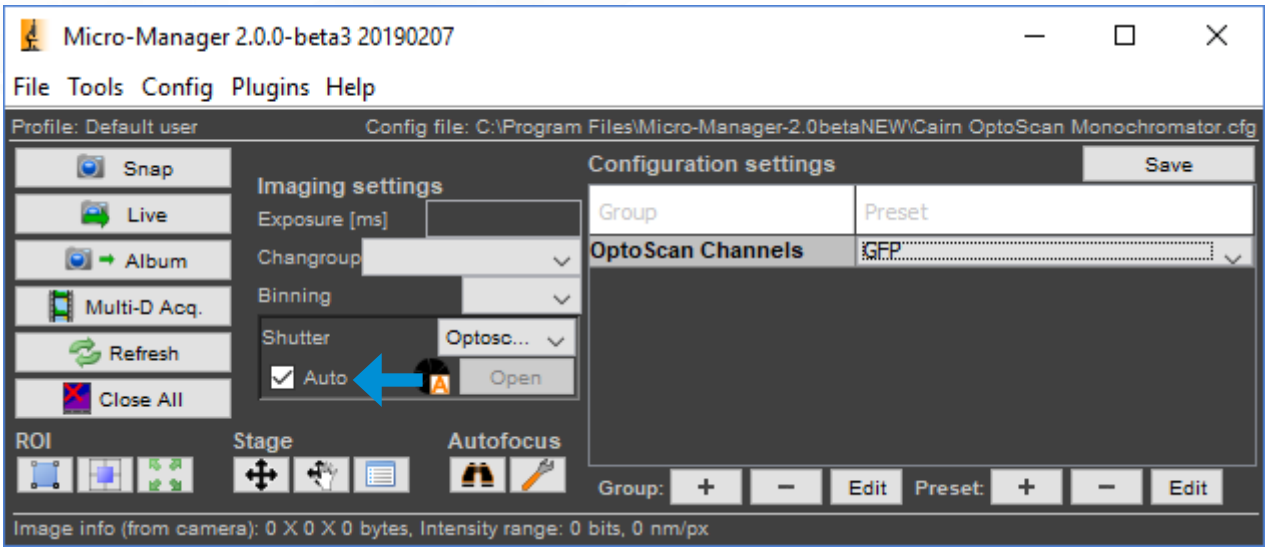
Once a Group has been created, a Preset will need to be created. Please highlight the previously created Group and click '+' on the Preset settings.



In this example, a Preset has been created for GFP. You can adjust the bandwidth, Input and Exit slit widths, name it and click "OK"



Ensure 'Auto Shutter' is ticked within the main MicroManager window to ensure the OptoScan shutter opens when you go 'Live' or run an acquisition.
A clicking sound will be clearly audible when the OptoScan shutter opens and closes



For further assistance, please do not hesitate to contact our Tech support team:
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