

Setting up a Cairn OptoScan in μManager

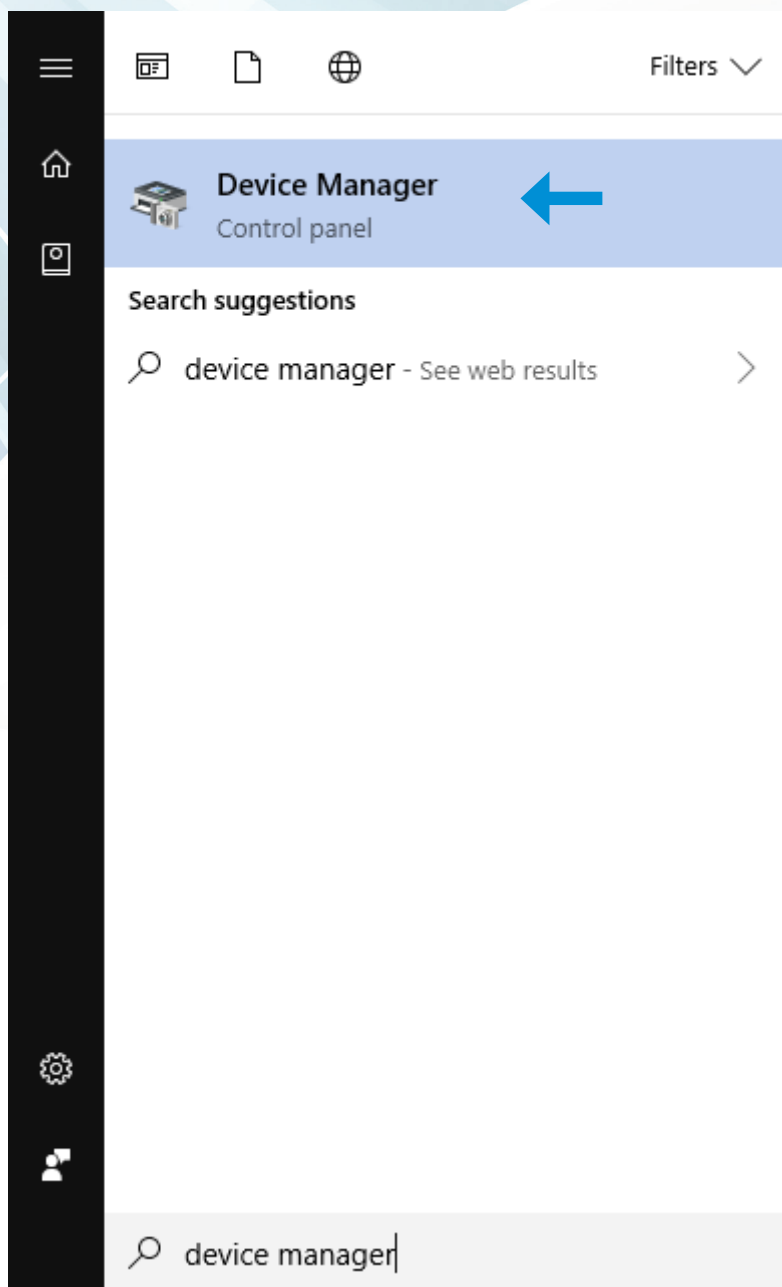
This guide details how to install and configure the Cairn OptoScan via USB drivers in MicroManager. For the purpose of this guide the install is on Windows 10 and using MicroManager Version 2.0 Beta

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.

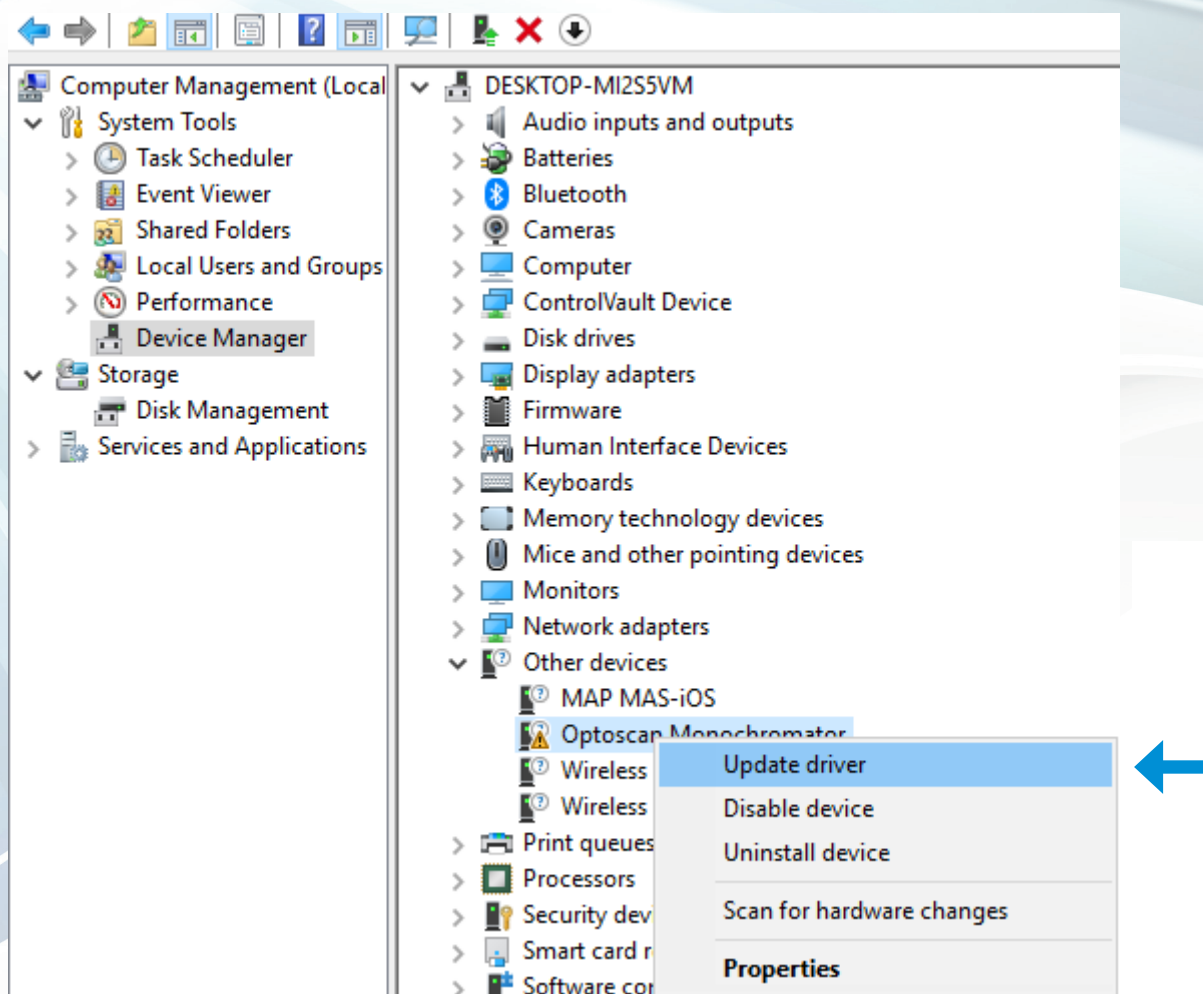
To do this, click on the Start Menu, search for and open 'Device Manager'



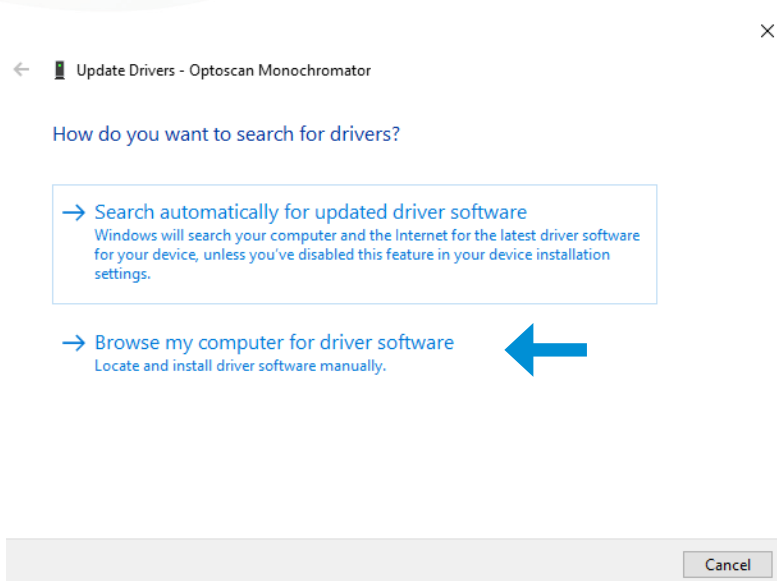
The required USB drivers will be included with your order on a Cairn USB stick.
Alternatively, these can be downloaded from the Software Support page on our website:
<https://www.cairn-research.co.uk/support/software/>

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"

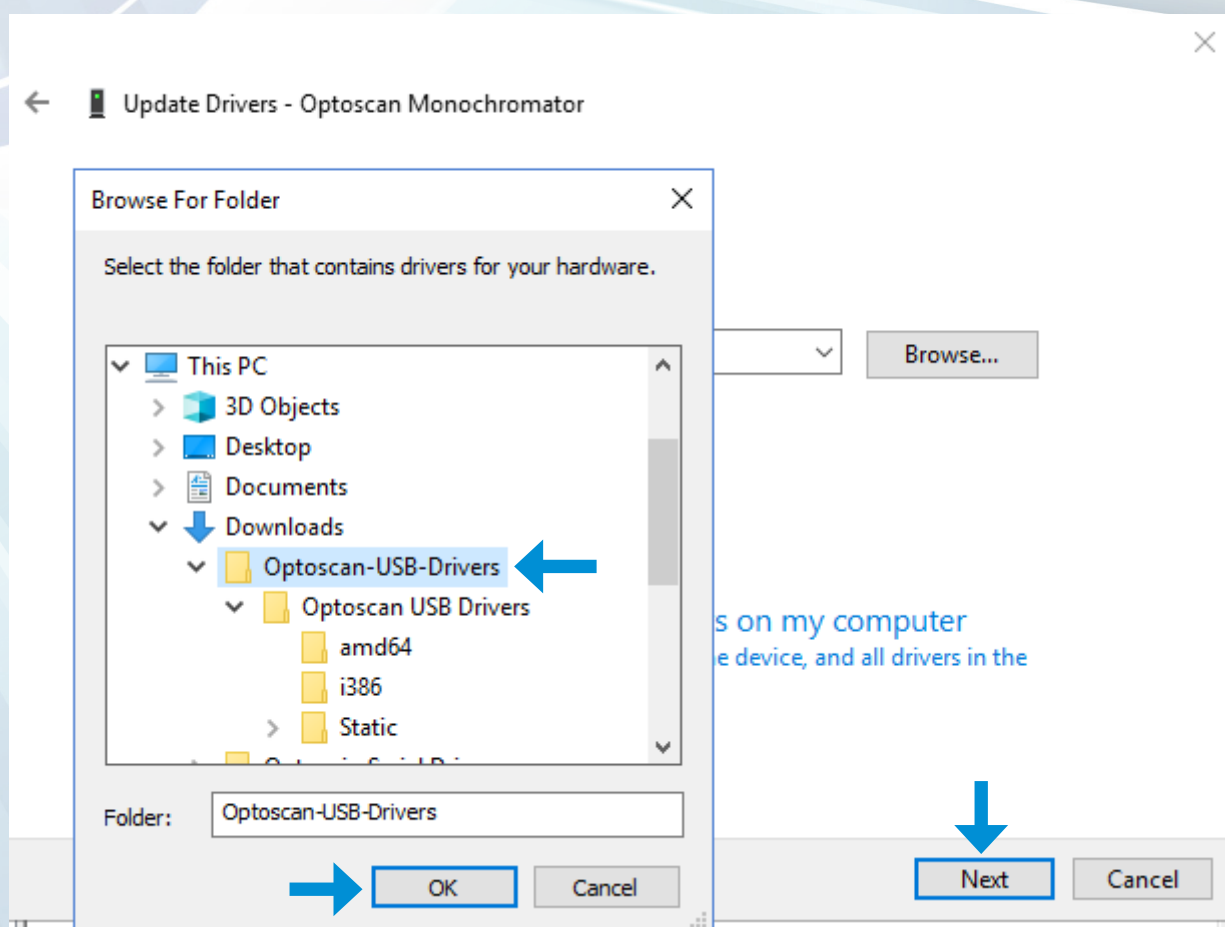


Choose "Browse my computer for driver software"

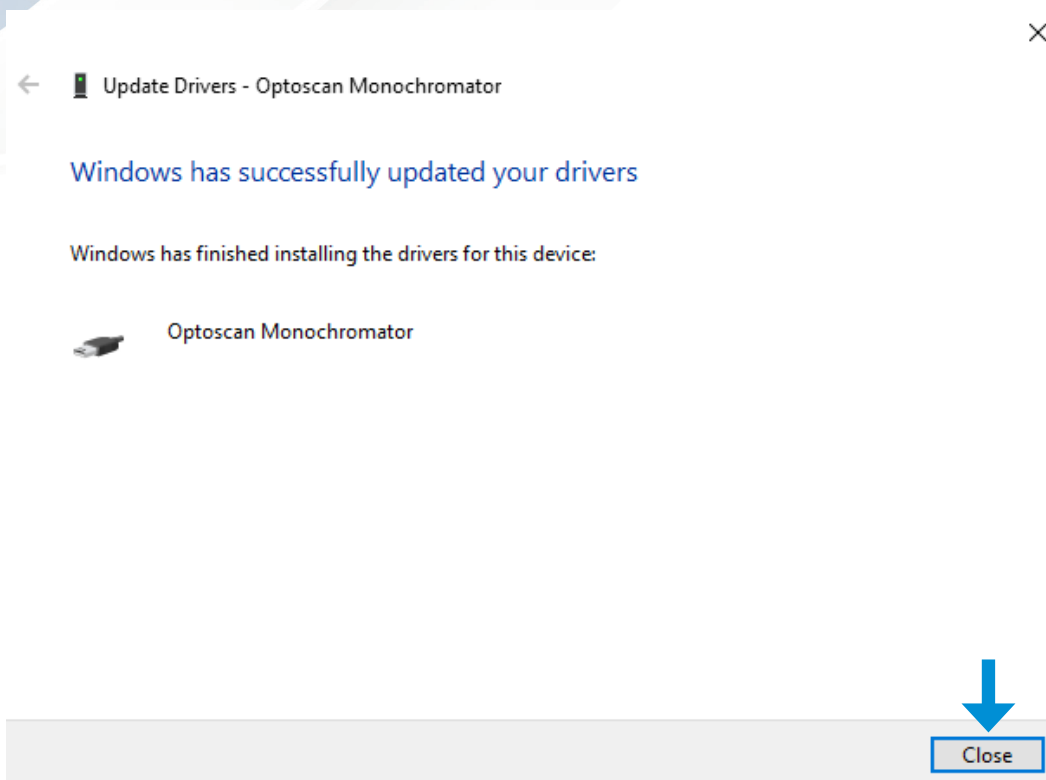


Locate the "OptoScan-USB-Drivers" folder you extracted earlier.

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\

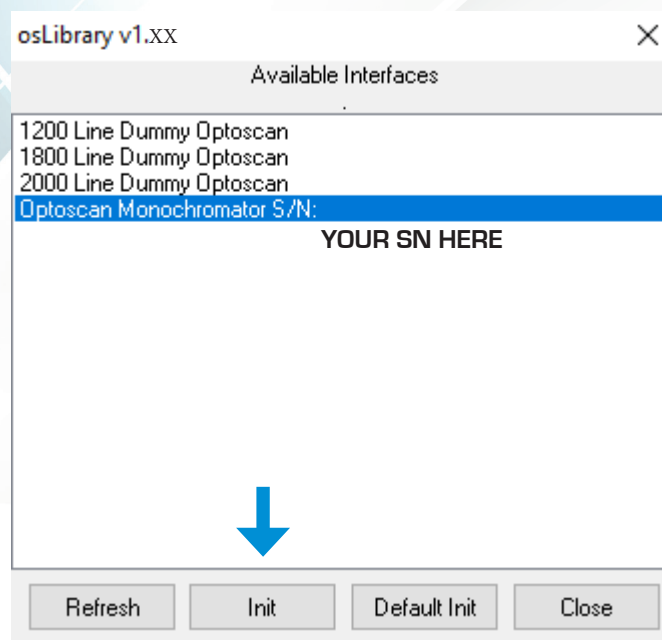
Once extracted, right click on the osDac icon and create a shortcut on your desktop.



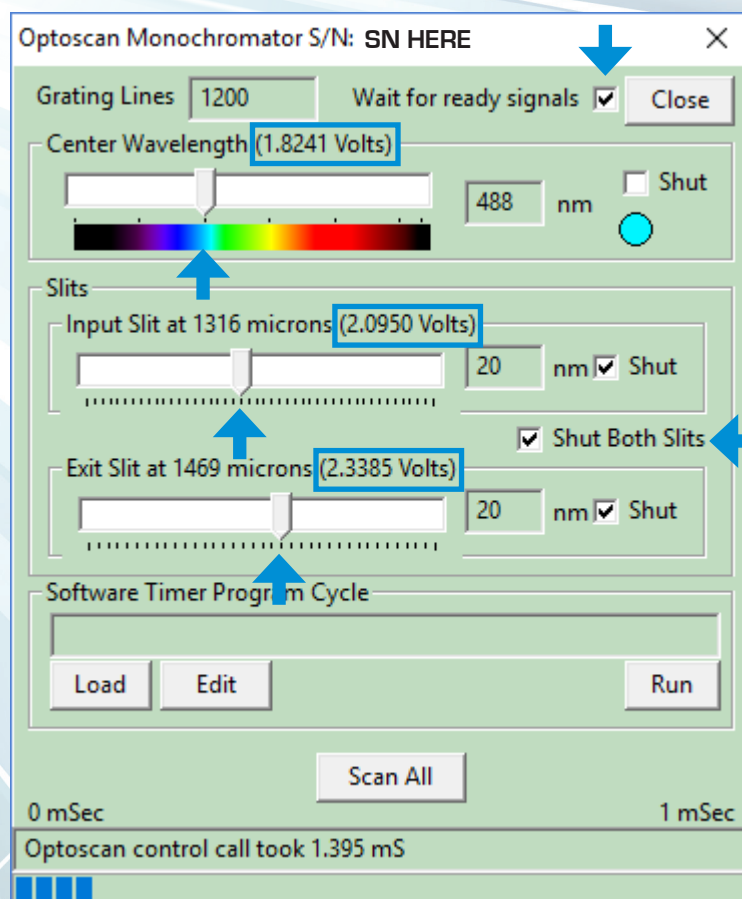
Find osDac and Run it, you will see a list of interfaces.

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.



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.

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.

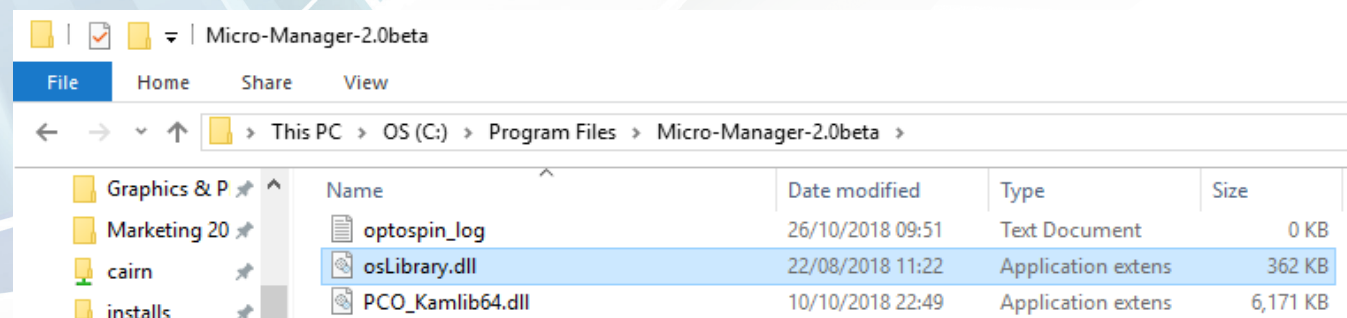
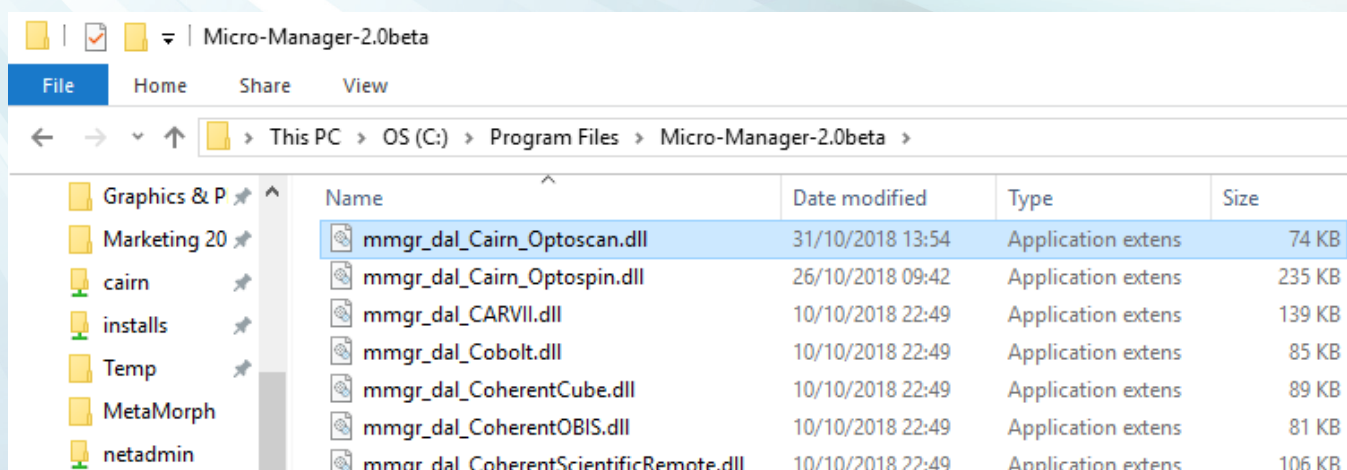
****Please note: the driver files are version specific and compiled for a certain build of MicroManager****
Using the files from the memory stick or files downloaded from the Cairn website;

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

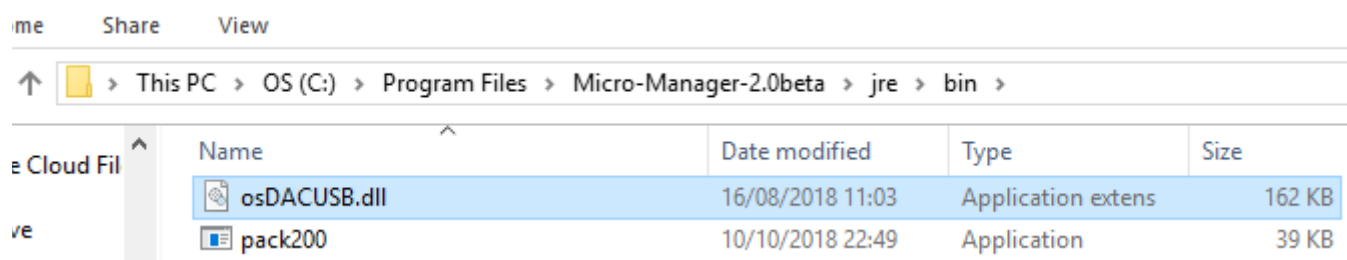


Copy:

osDACUSB.dll

Into a different folder in the MicroManager directory:

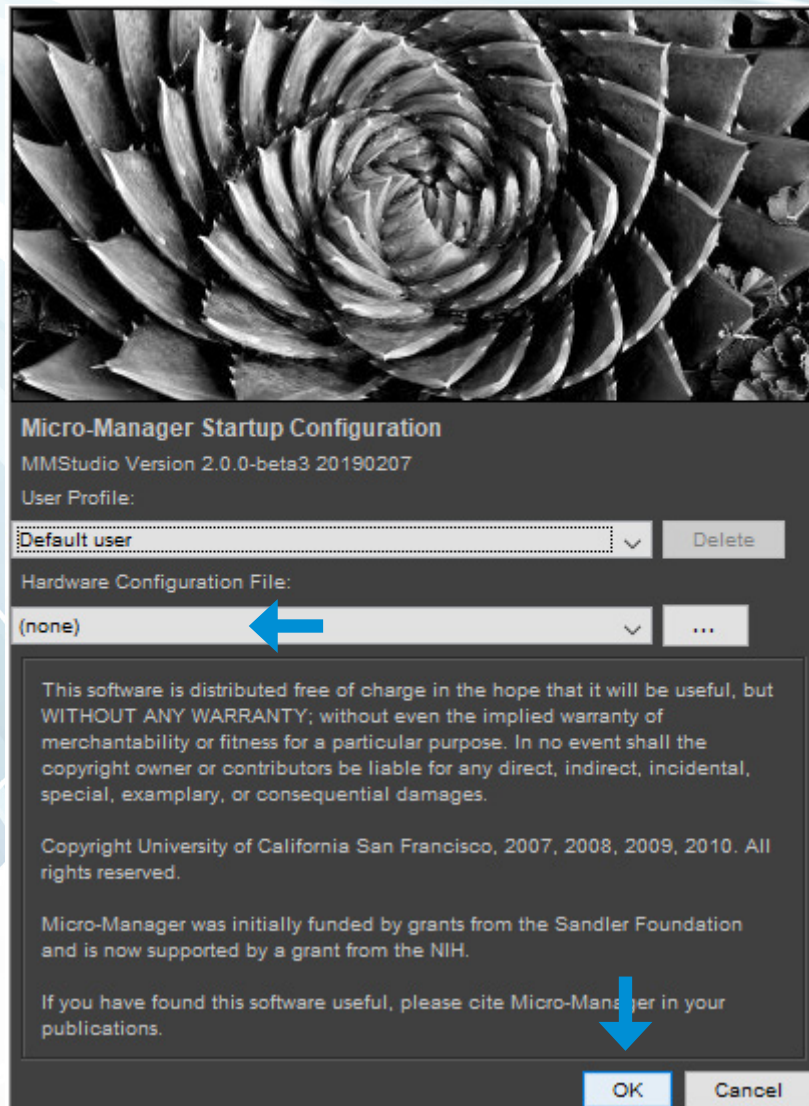
C:\Program Files\Micro-Manager-2.0beta\jre\bin



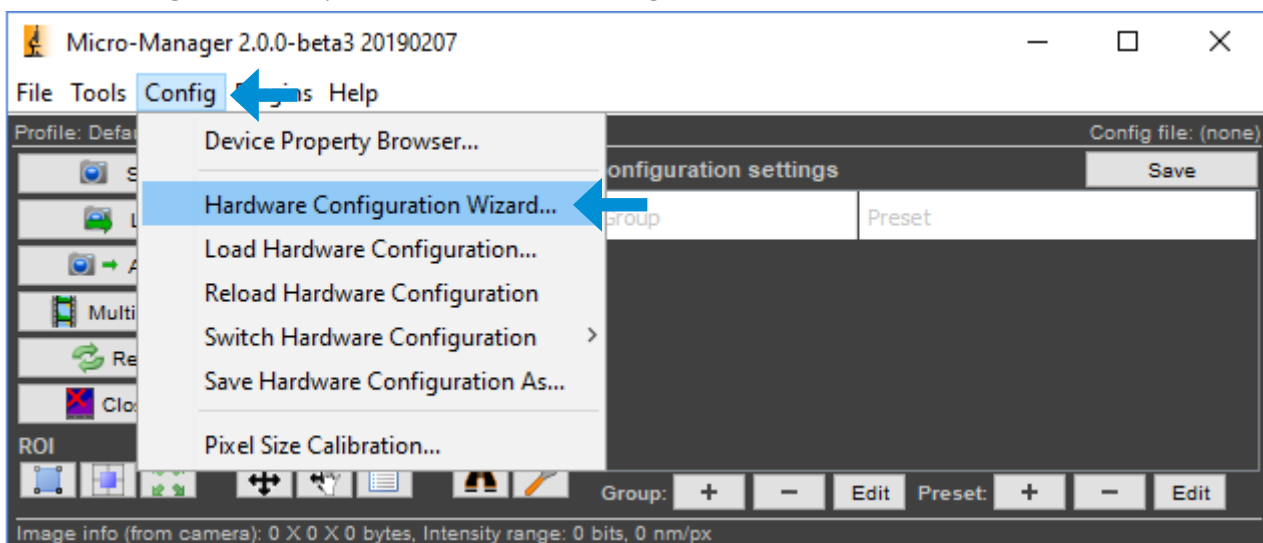
D) Installing the USB OptoScan Monochromator in MicroManager

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

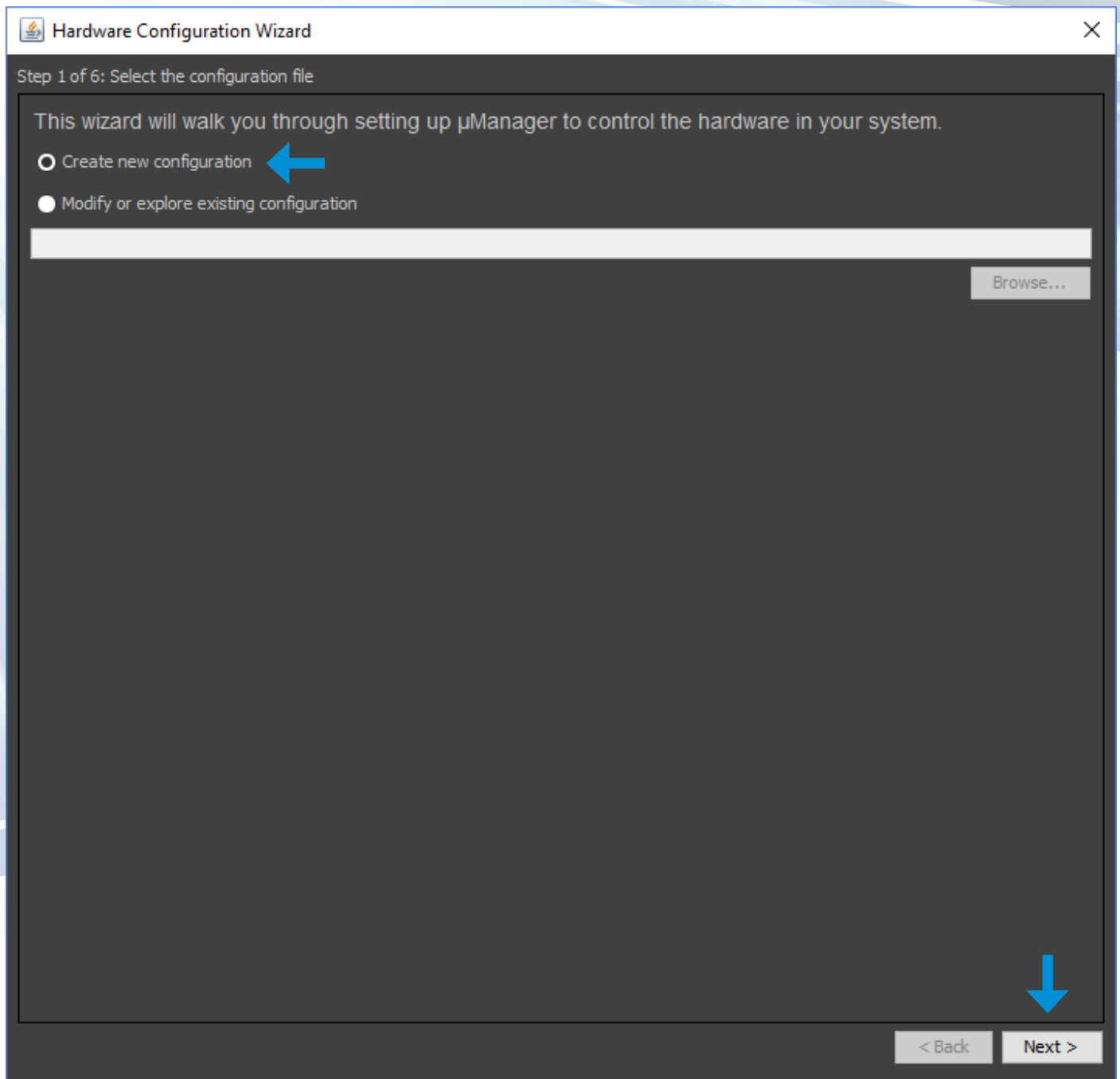
Open MicroManager and set the “Hardware Configuration File” to “None” and press OK.



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



Check "Create new configuration" and press "Next"



The image shows a screenshot of the 'Hardware Configuration Wizard' window. The title bar reads 'Hardware Configuration Wizard' with a close button (X) on the right. The main content area has a dark background and contains the following text: 'Step 1 of 6: Select the configuration file' and 'This wizard will walk you through setting up µManager to control the hardware in your system.' Below this text are two radio button options: 'Create new configuration' and 'Modify or explore existing configuration'. A blue arrow points to the 'Create new configuration' option. Below the radio buttons is a large, empty white rectangular area. To the right of this area is a 'Browse...' button. At the bottom right of the main content area, there is a blue arrow pointing downwards. At the bottom of the window, there are two buttons: '< Back' and 'Next >'. The window has a standard Windows-style title bar and a close button.

Hardware Configuration Wizard

Step 1 of 6: Select the configuration file

This wizard will walk you through setting up µManager to control the hardware in your system.

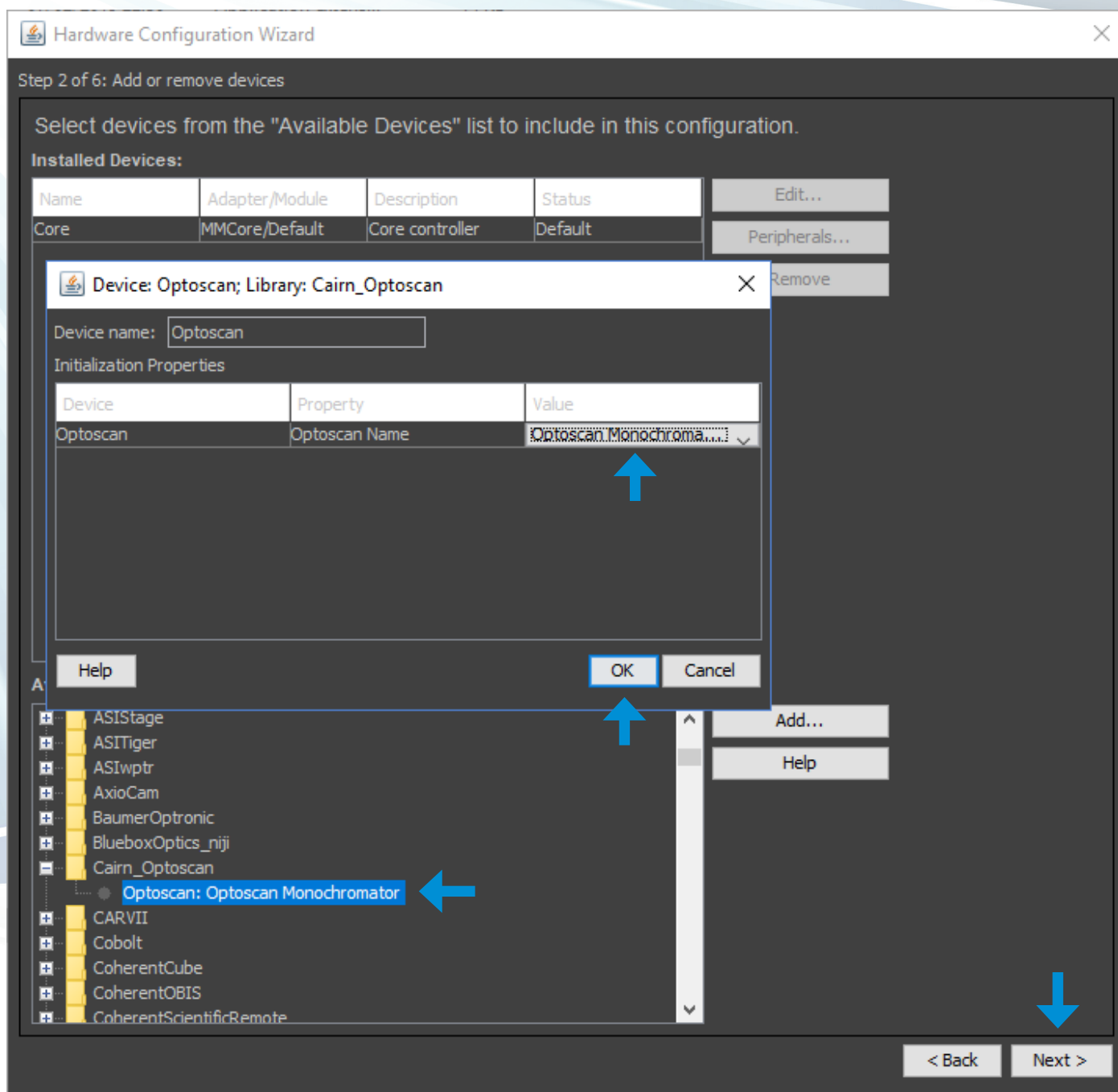
☒ Create new configuration

☐ Modify or explore existing configuration

Browse...

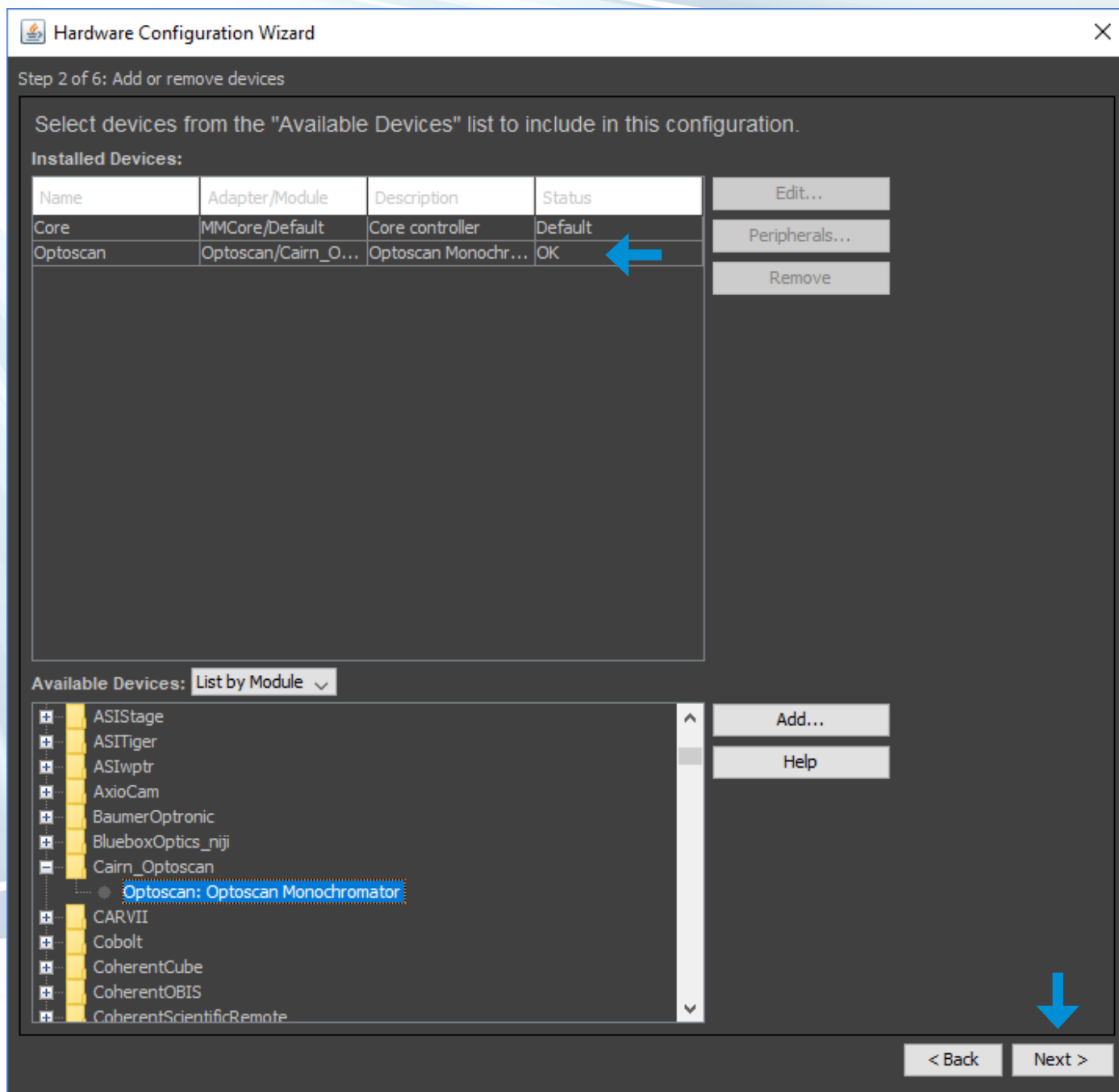
< Back Next >

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 "Default Shutter" will be displayed as OptoScan.

Hardware Configuration Wizard

Step 3 of 6: Select default devices and choose auto-shutter setting

Select the default device, where available, to use for certain important roles.

Default Camera:


Default Shutter: ←

Default Focus Stage:

☒ Use Autos shutter By Default

< Back Next >


Click "Next"

 **Hardware Configuration Wizard** ✕

Step 4 of 6: Set delays for devices without synchronization capabilities

Set how long to wait for the device to act before μ Manager will move on (for example, waiting for a shutter to open before an image is snapped). Many devices will determine this automatically; refer to the help for more information.

Name	Adapter	Delay [ms]	Help
Optoscan	Optoscan	0.0	



< Back 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

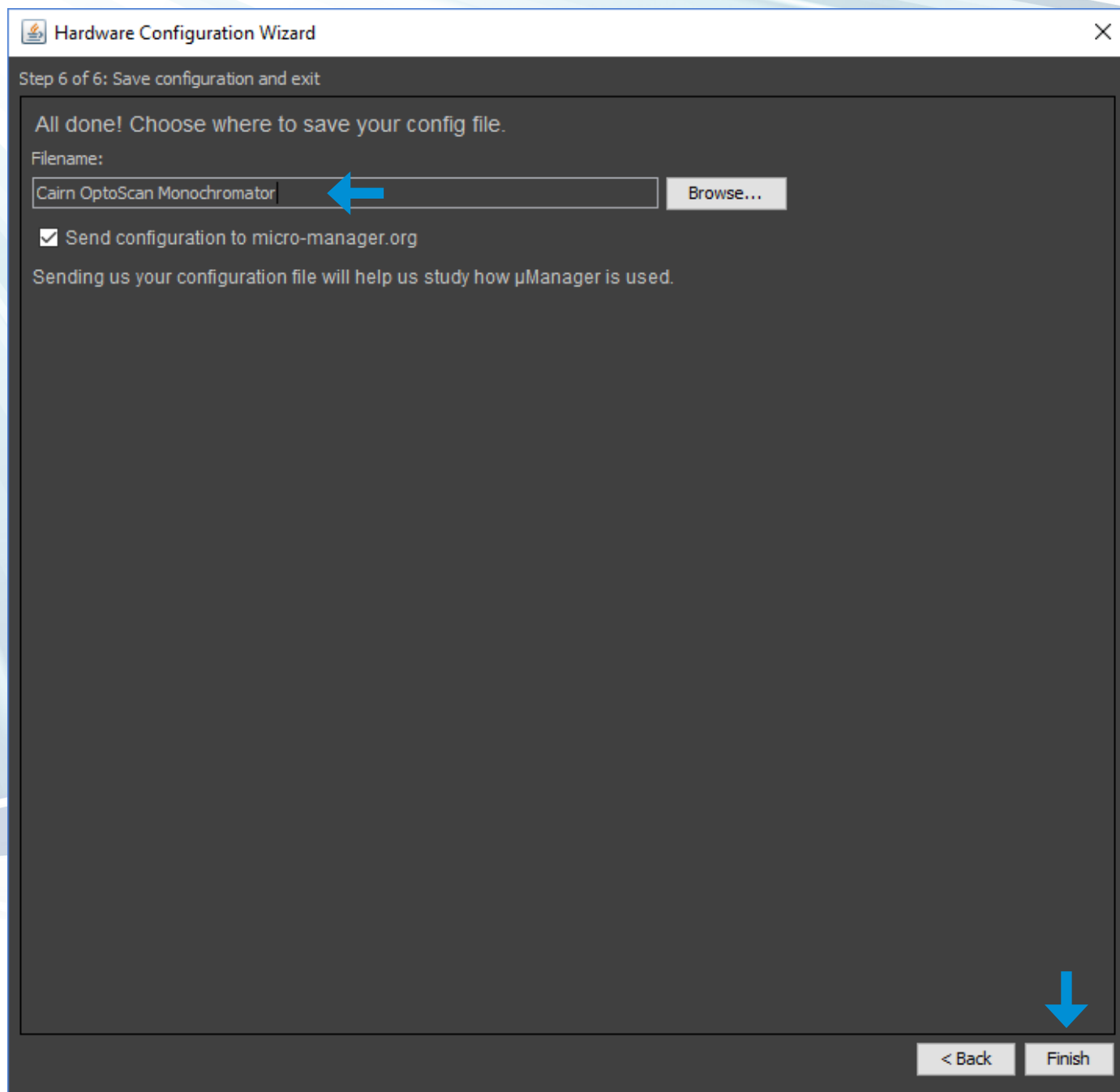


< Back

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"




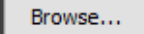
Hardware Configuration Wizard

Step 6 of 6: Save configuration and exit

All done! Choose where to save your config file.


Filename:

Cairn OptoScan Monochromator 



☒ Send configuration to micro-manager.org

Sending us your configuration file will help us study how μ Manager is used.

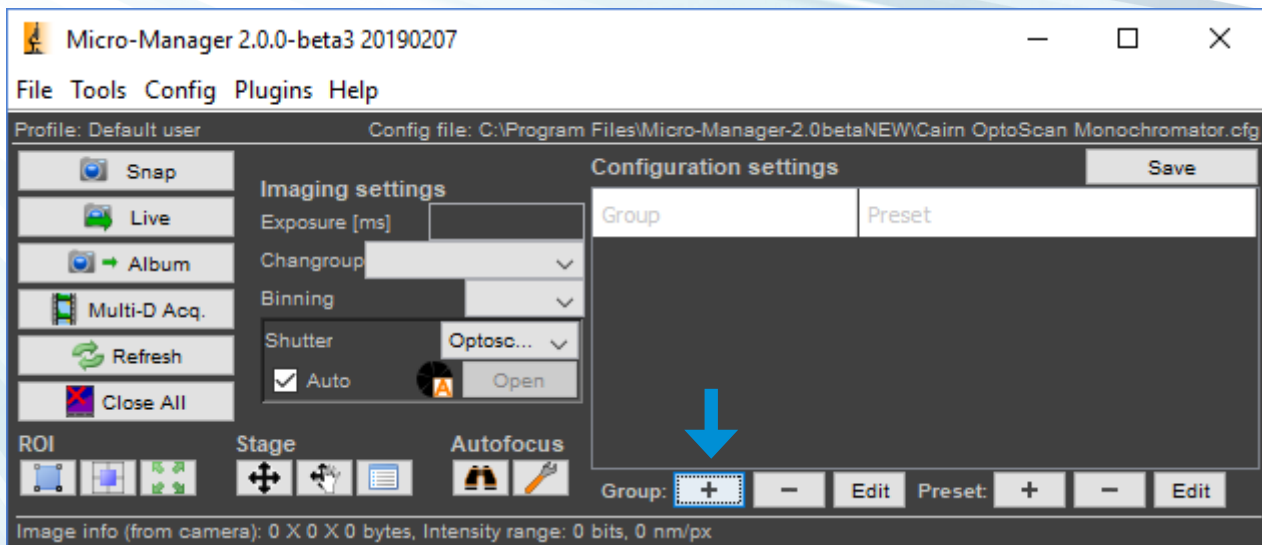


< Back Finish

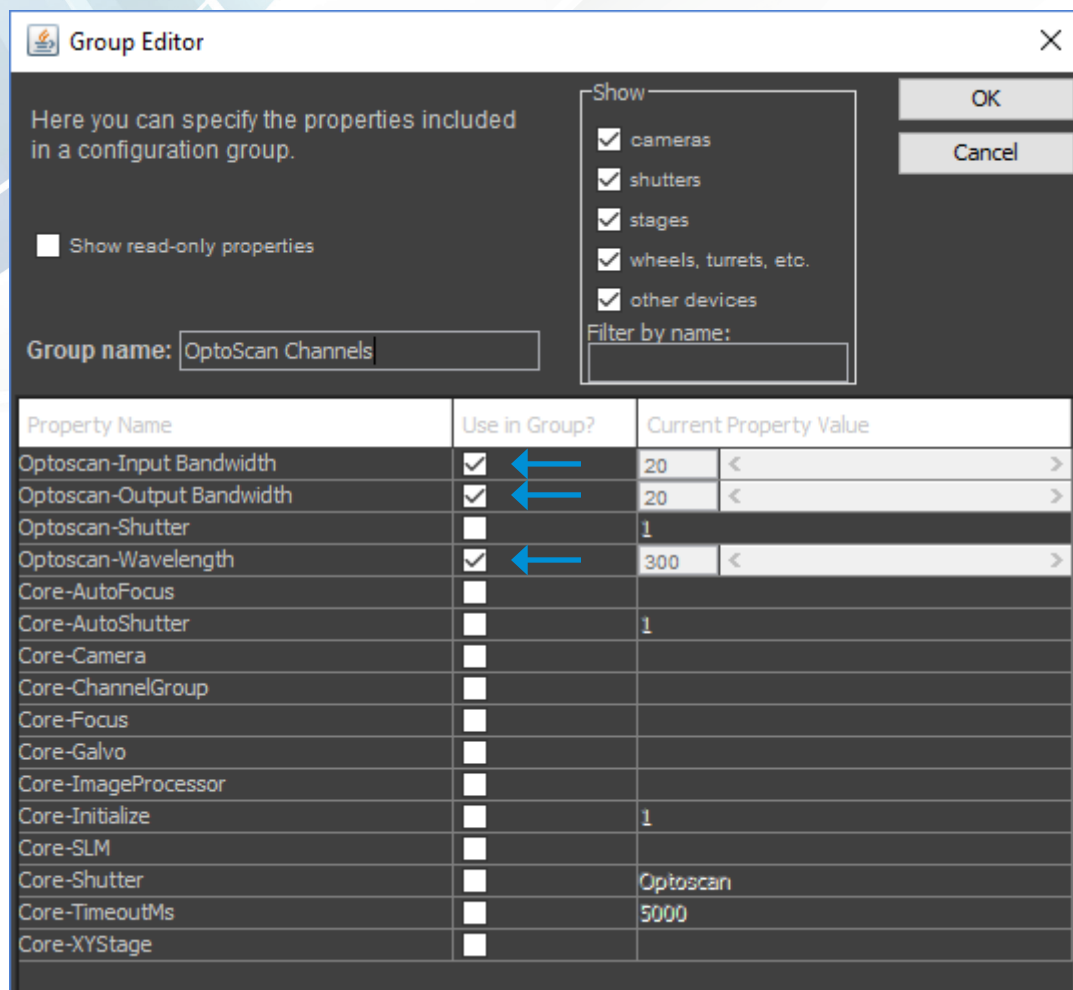
Click "Finish"

E) Add illumination settings for each of your required fluorophores

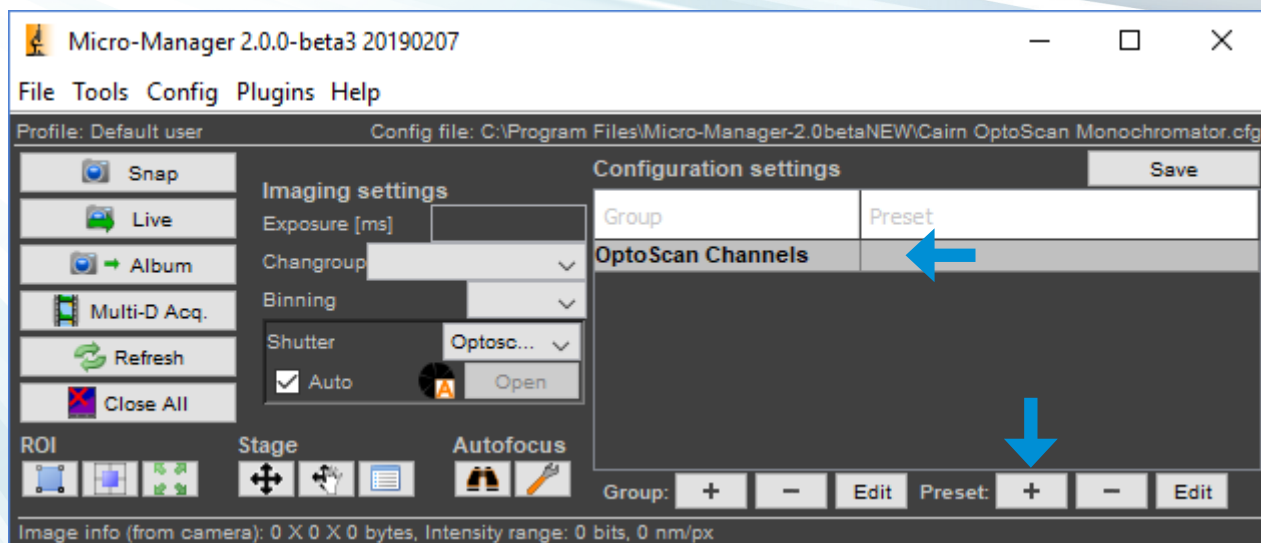
Add a new Group within Configuration Settings.



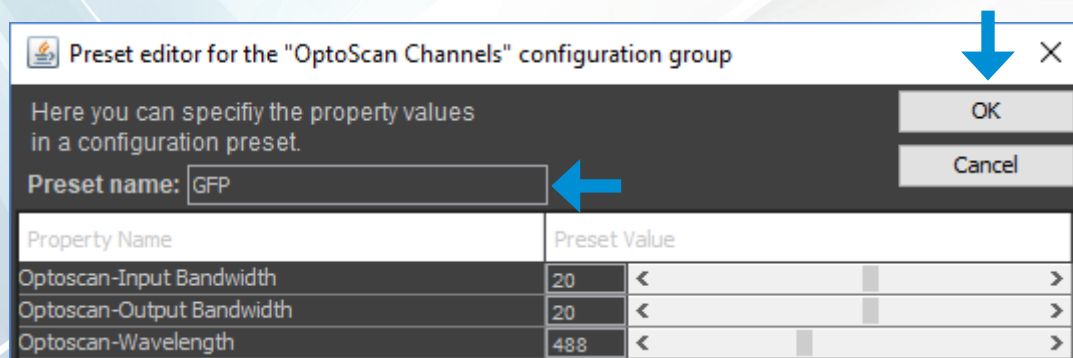
In the Group Editor window, select Optoscan-Input Bandwidth, Optoscan-Output Bandwidth & Optoscan-Wavelength. Give the Group a name, for the purpose of this guide it is named "OptoScan Channels", press "OK"



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.

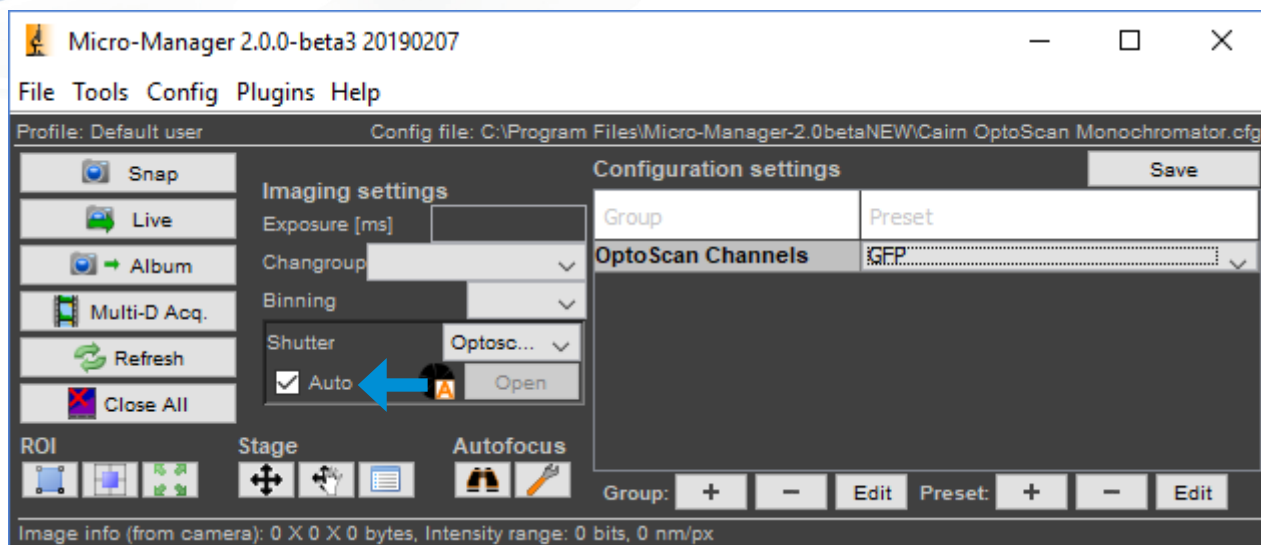


In this example, a Preset has been created for GFP. You can adjust the bandwidth, Input and Exit slit widths, name it and click "OK"



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:
tech@cairn-research.co.uk + 44 (0)1795 590140