

The Cairn OptoSpin is a compact, rapid, and powerful filter changer for precisely synchronised continuous spinning and fast stepping applications. Unlike competing devices the filter wheel can be easily unplugged from the lightpath for convenient fitting of optical filters. It uses an external rotor motor design, rather than a stepper motor, which enables both the fast spinning mode and also makes transitions between non-adjacent filter positions much more rapid. The standard power supply has control electronics for two filter wheels which can either be fitted into a dual holder to make a virtual 10-position wheel or into two separate holders for mounting 6-position wheels separately on a rig.

The default control is via USB drivers which are currently supported in MetaMorph and MicroManager. Support for further applications such as NIS Elements and Ill Slidebook is planned for the near future, but a digital interface and cable is also available on request so that the OptoSpin can be used in any software which supports multiple digital shutter lines or has digital IO, typically using National Instruments or Measurement Computing cards.

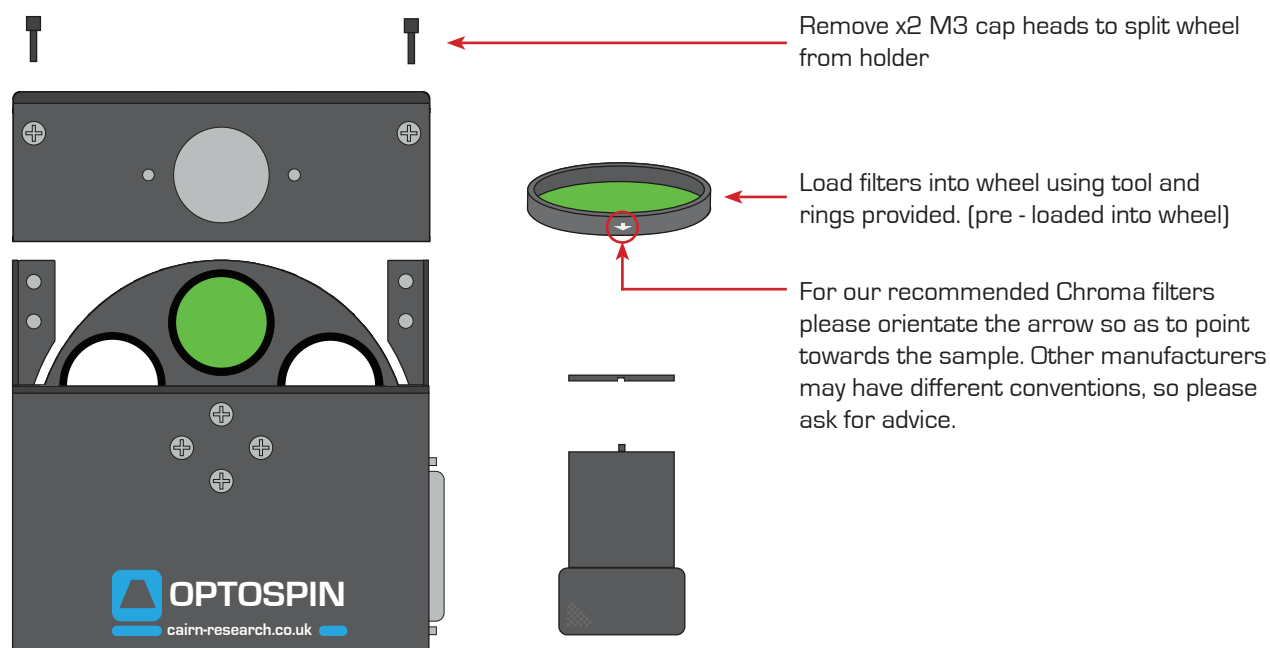
Contents

Please refer to your order confirmation or delivery note for details, but the package should contain all or some of the following:

- OptoSpin filter wheel(s)
- Single or dual wheel holders
- Dual channel controller
- Power and signal D connector(s)
- USB connector
- USB stick with documentation and drivers
- Microscope input or output port
- Filter removal tool and Allen key

Component Setup

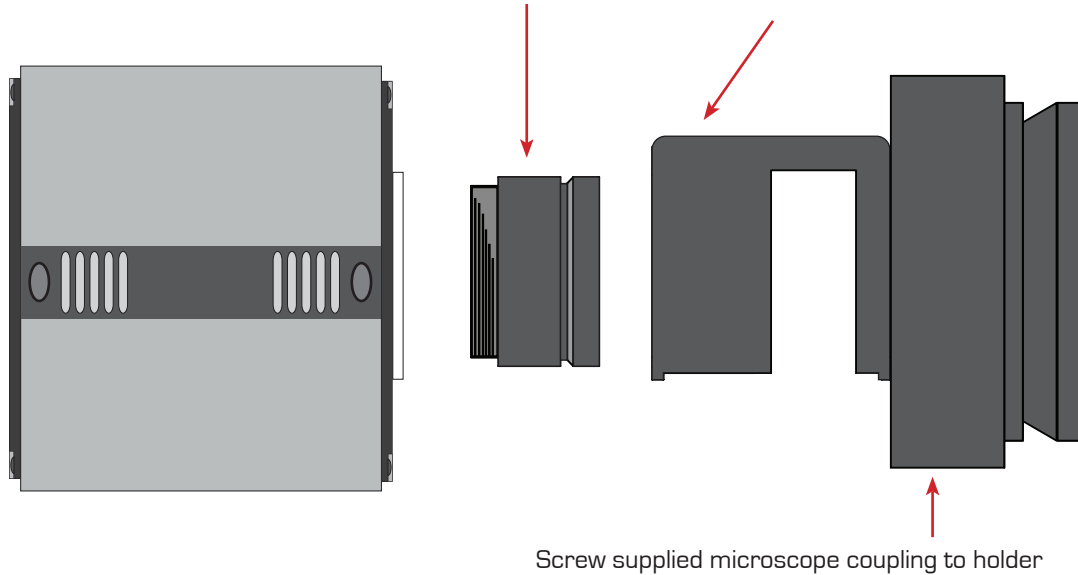
Fitting Filters into the Optospin



Fitting the Microscope Coupling and C - Mount to Camera

Remove stainless steel C - Mount from holder and screw into camera. Leave camera out of the holder for now

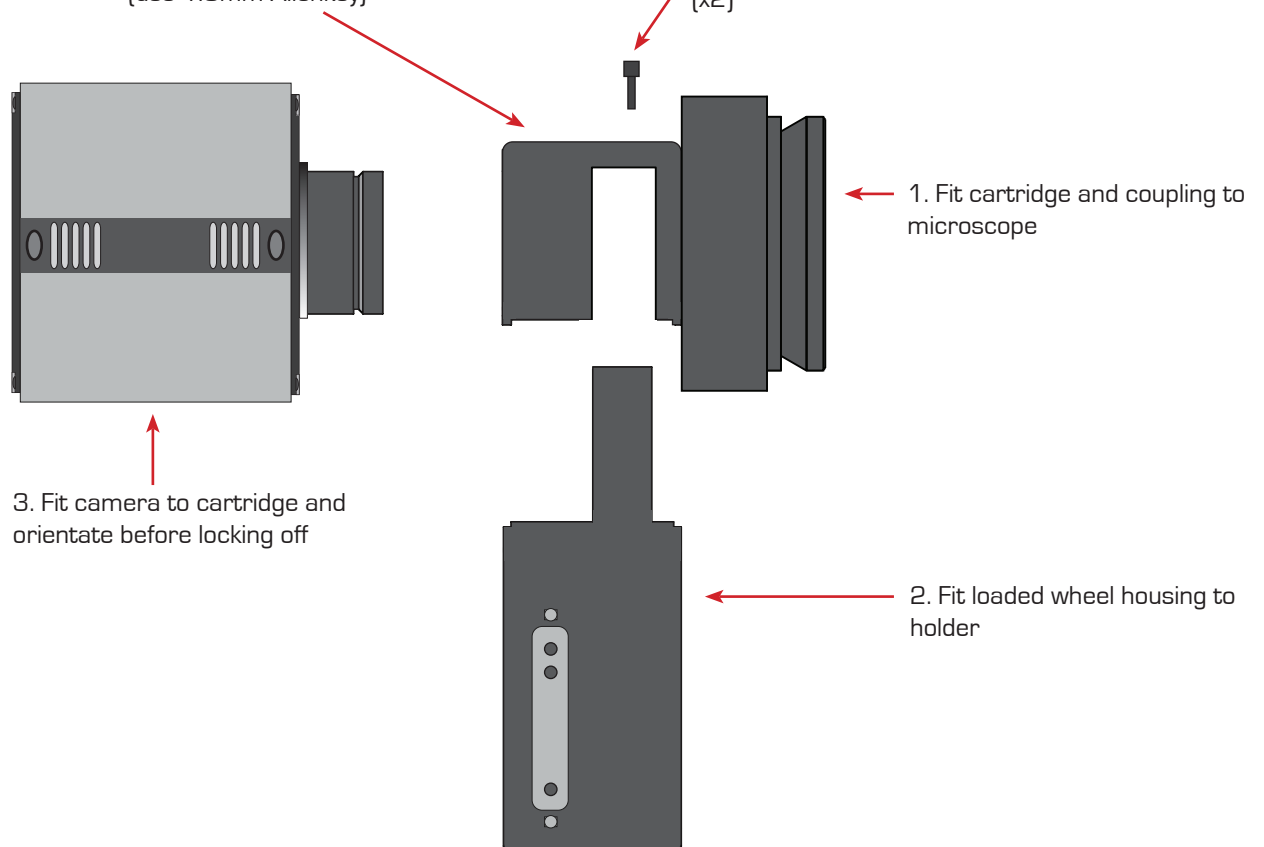
C - Mount locking screw
(use 1.5mm Allenkey)



Fitting the Optospin to the Microscope and Mounting Camera

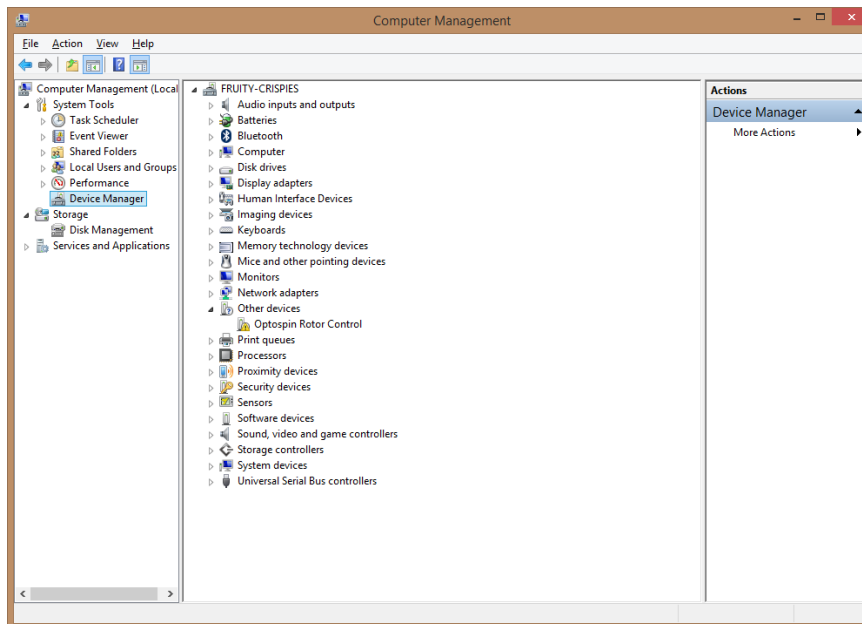
C - Mount locking screw
(use 1.5mm Allenkey)

M3 Fixing screws
(x2)

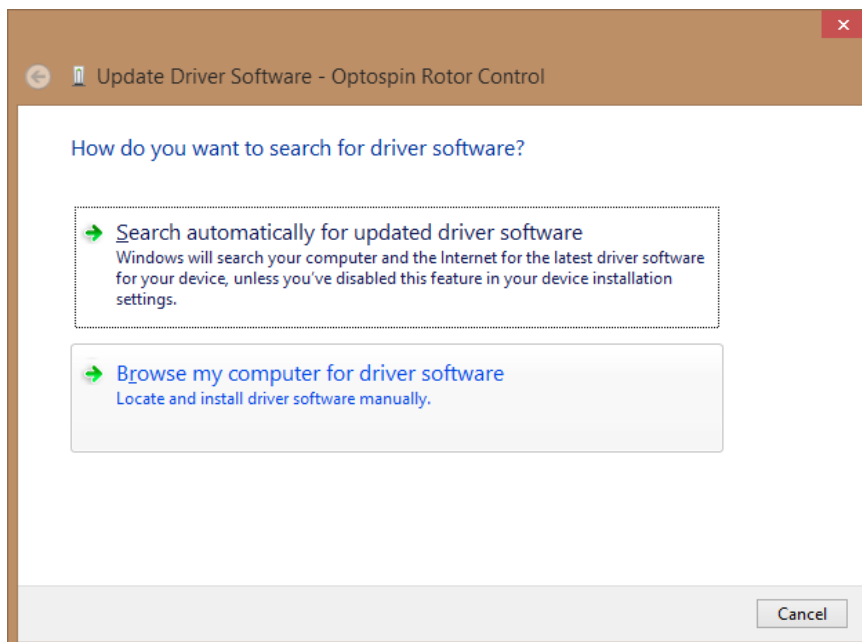


USB Driver Installation

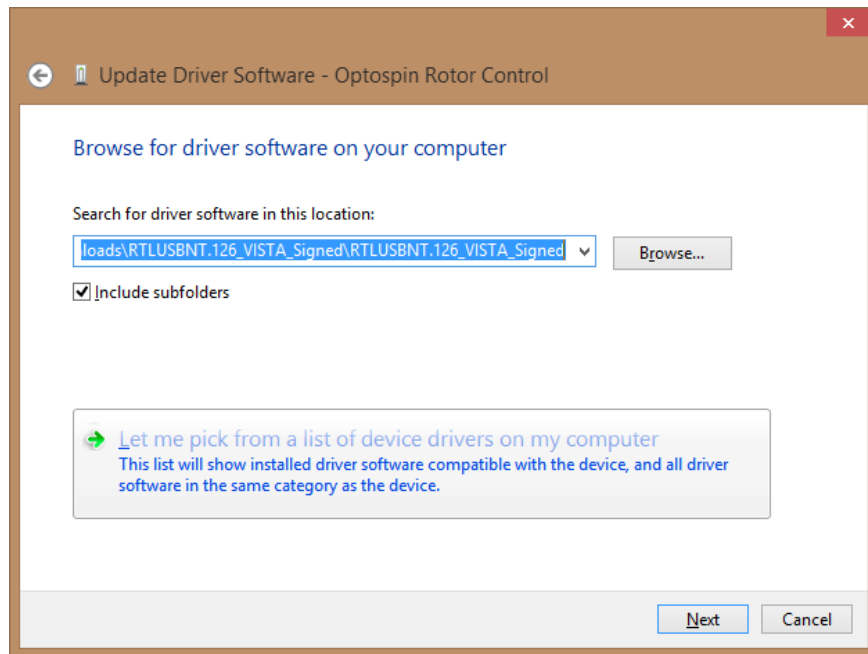
1. Goto the Windows Device Manager



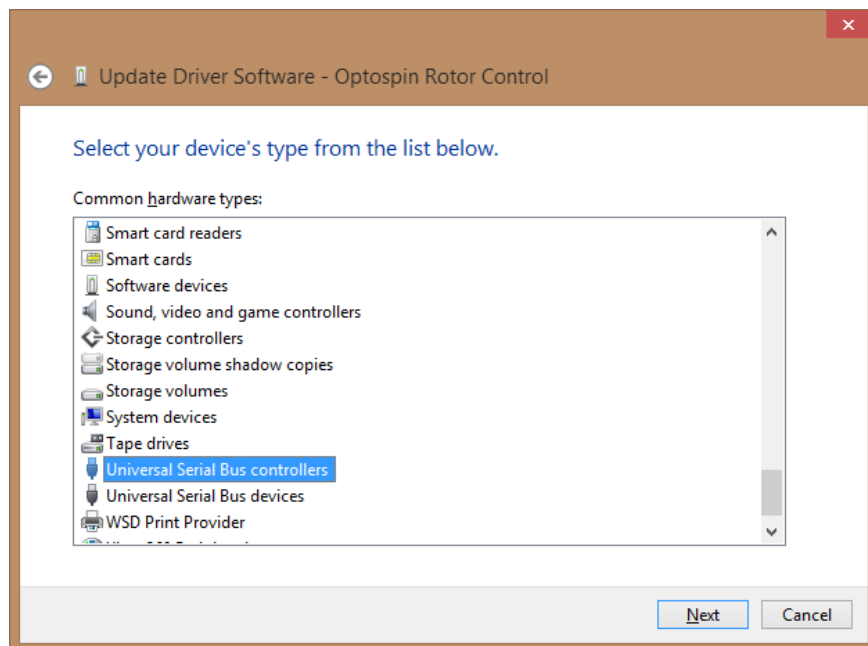
2. Right click on the Optospin rotor control, or if already installed open the Universal Serial Bus controllers at the bottom and right click on the optospin entry, select Update driver software



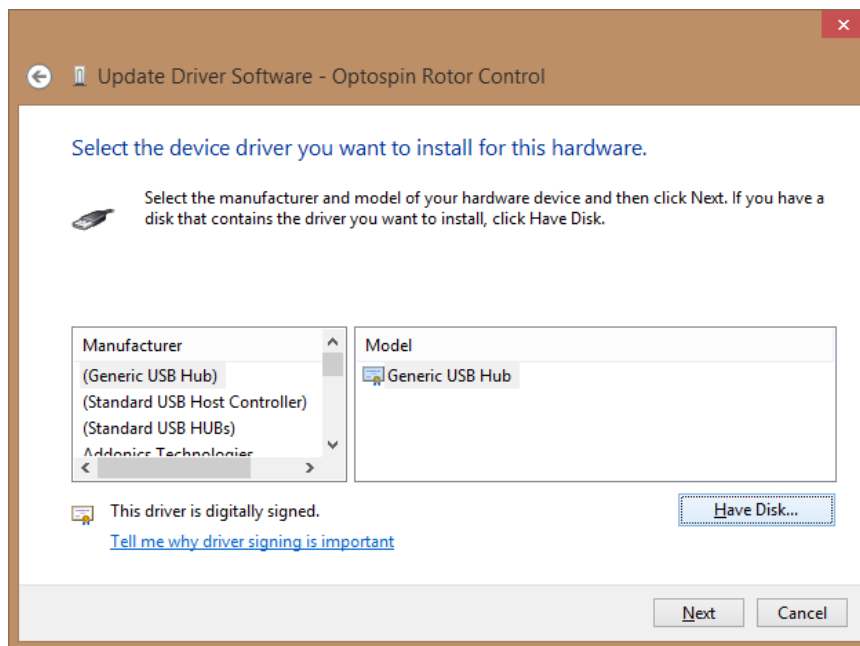
3. Click on Browse my computer for driver software



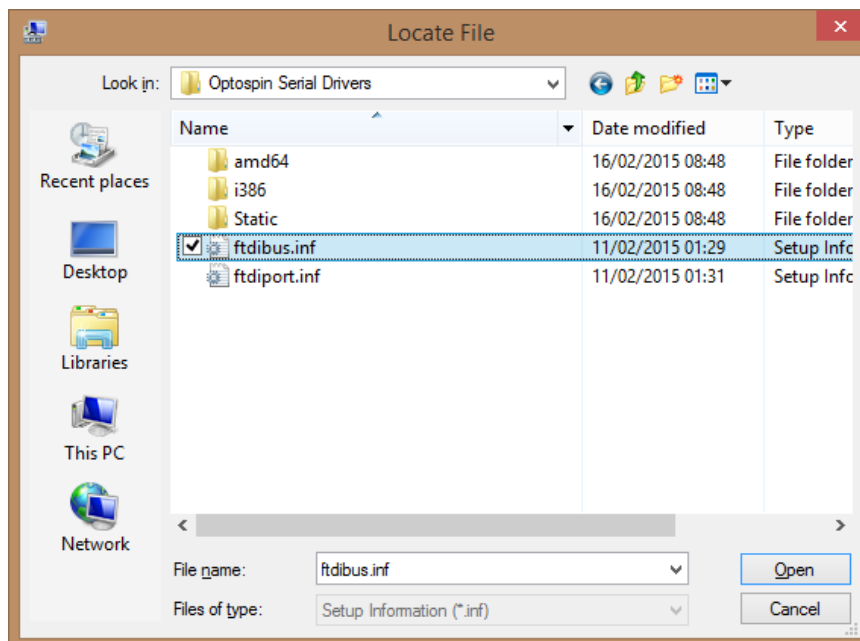
4. Click on Let me pick from a list of device drivers on my computer



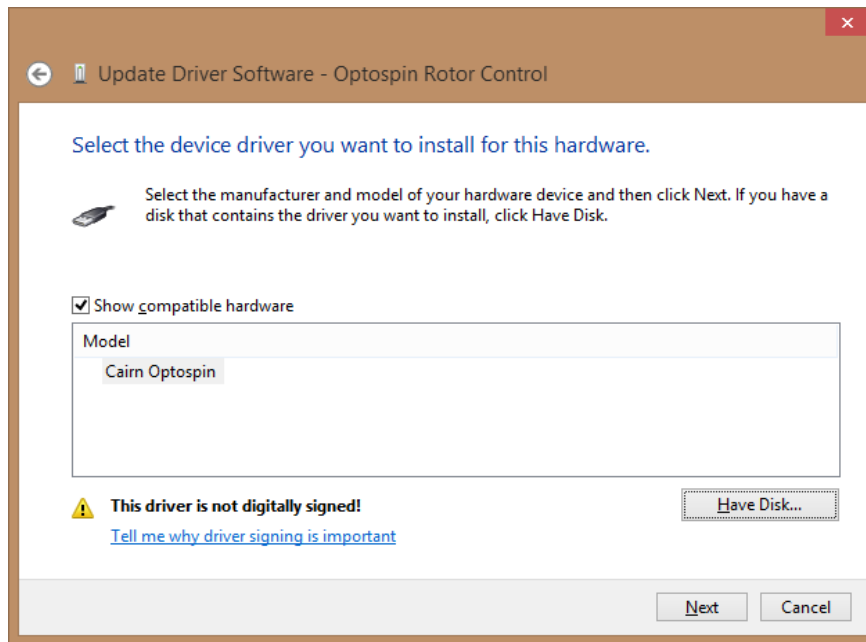
5. Select Universal Serial Bus controllers then click next



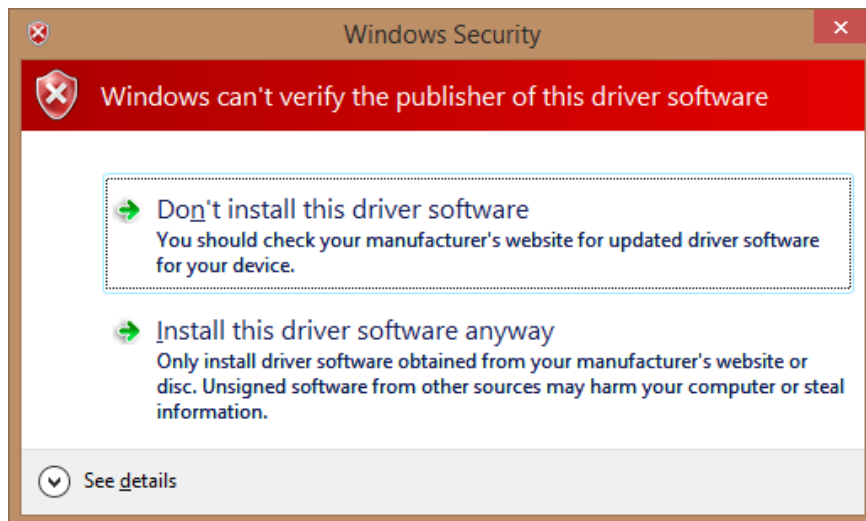
6. Click Have Disk, and navigate to Optospin Serial Drivers folder



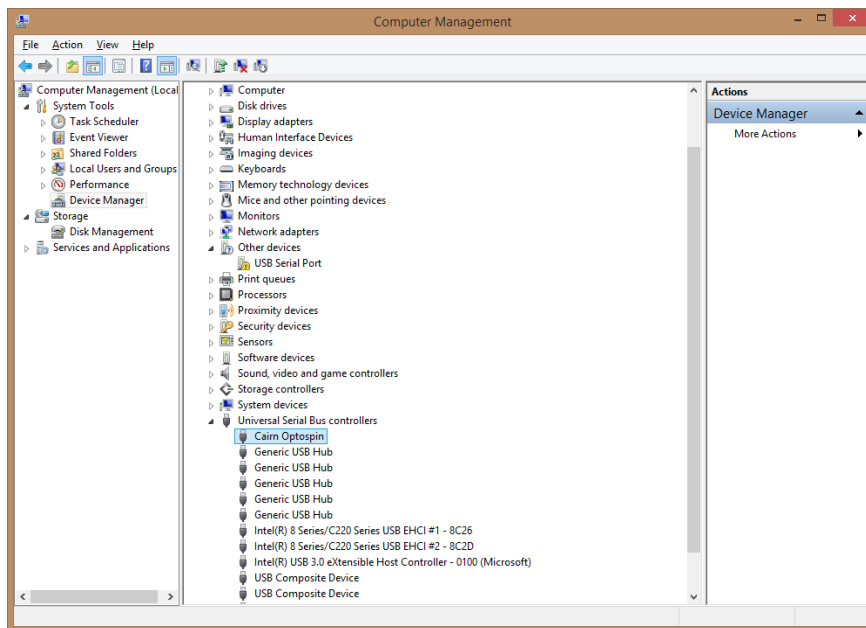
7. Select ftdibus.inf and click Open



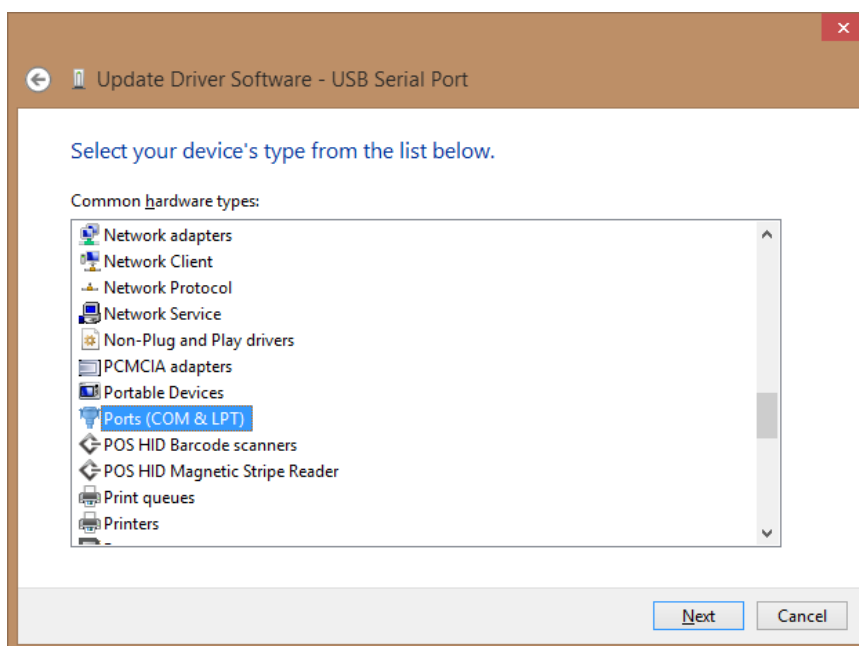
8. Select Cairn Optospin and Click Next



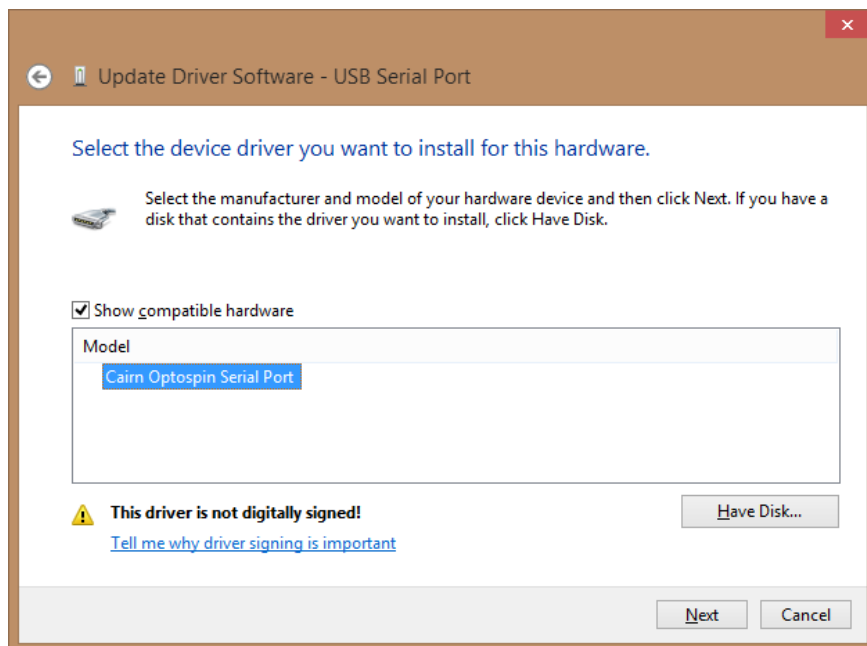
9. On the Windows Security dialog, click on Install this driver software anyway



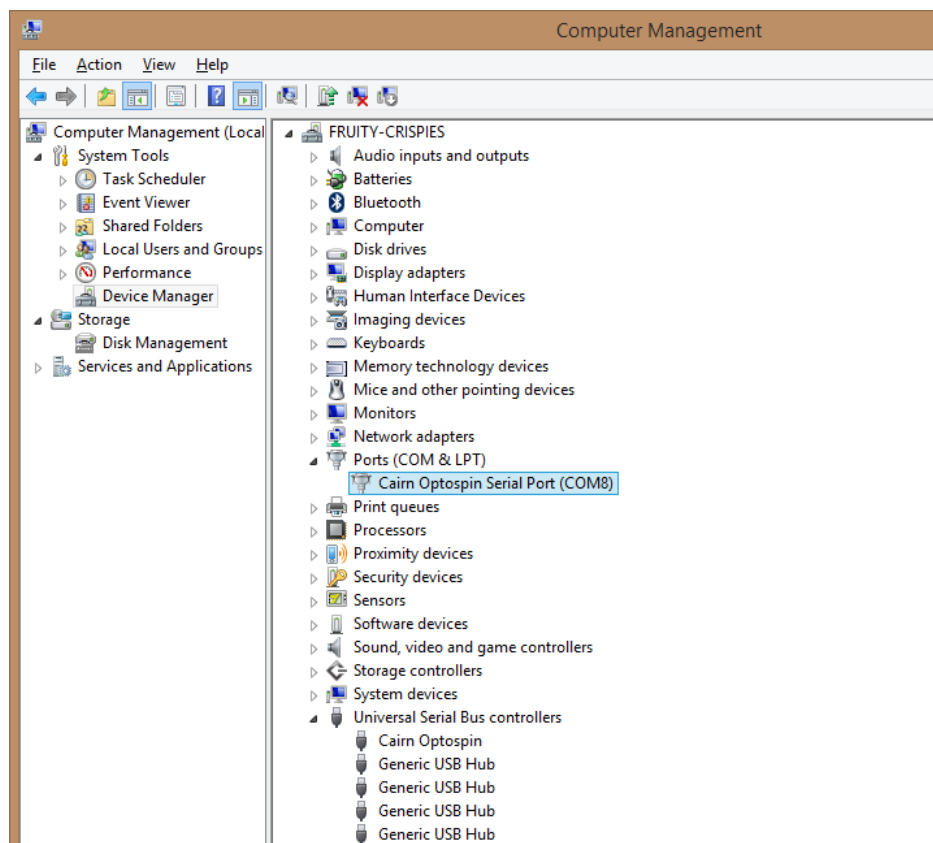
10. If a USB Serial device doesn't appear in the device manager under Other devices, unplug the Optospin USB and plug it back in. Right click on the USB Serial Port and choose update driver software, Click Browse my computer for driver software, followed by Let me pick from a list of device drivers on my computer. (as before)



11. Select Ports (COM & LPT), click have disk and browse to the same folder as before and select ftdiport.inf



12. Select Cairn Optospin Serial Port, and click Next on the security page that follows select the Install this driver software anyway option.



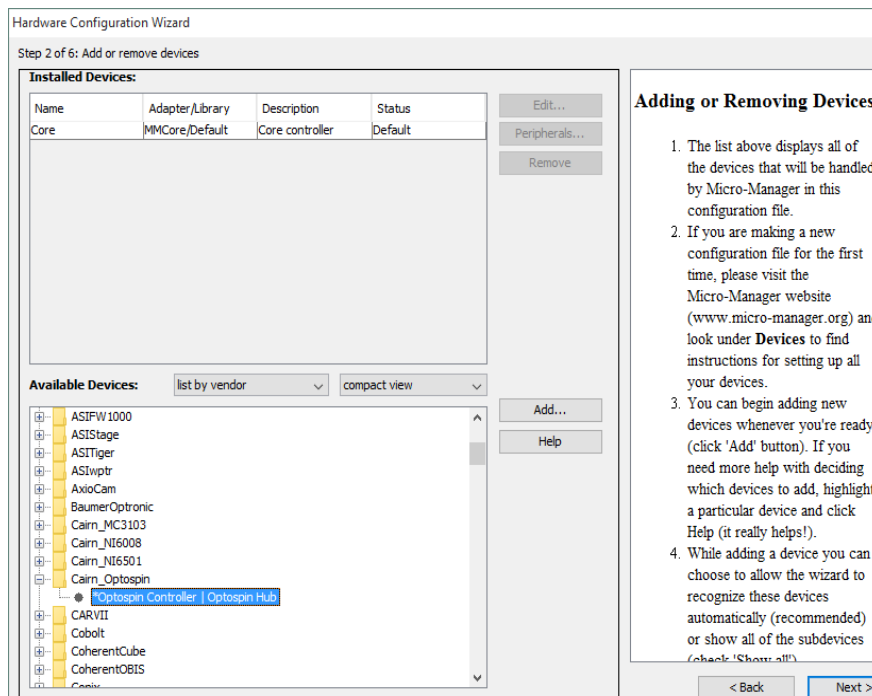
13. When installed Device manager should look something like this.

Software Control

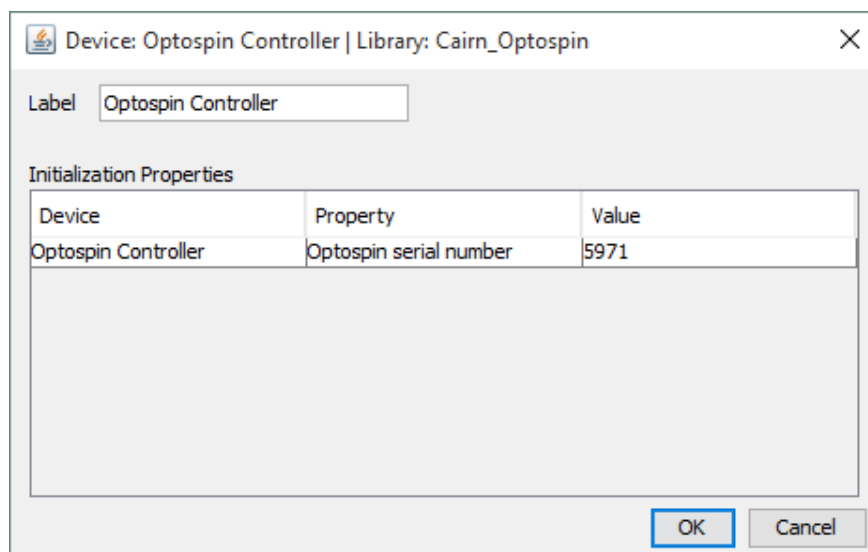
The Optospin can be controlled using Micromanager, MetaMorph or the PIC Test software.

Micromanager

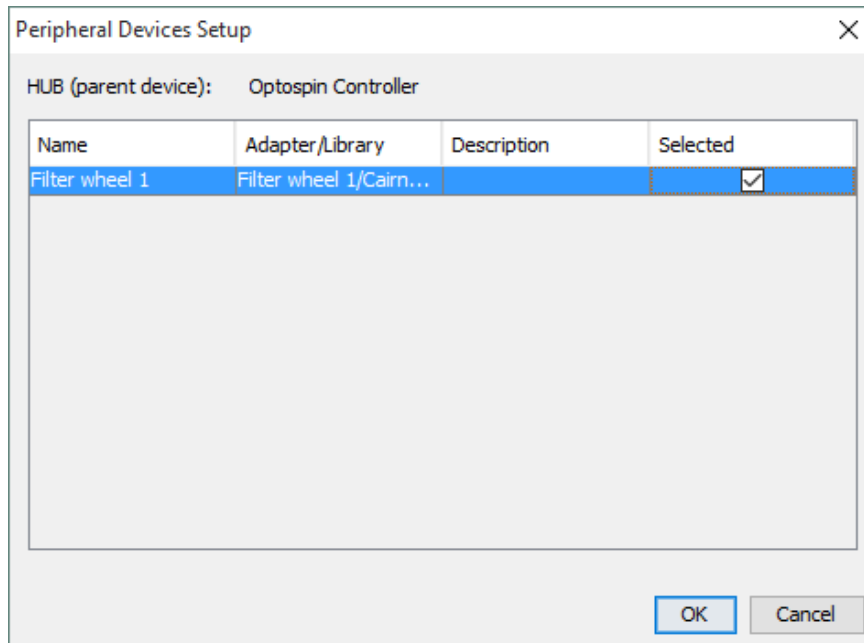
1. Install Micro-Manager-1.4.23_20150917 Nightly build (Included on the USB Stick)
2. Copy the mmgr_da1_Cairn_Optospin.dll file into the root Micro-Manager folder
2. Install the Device Adapter using the Hardware Configuration Wizard under the Tools Menu



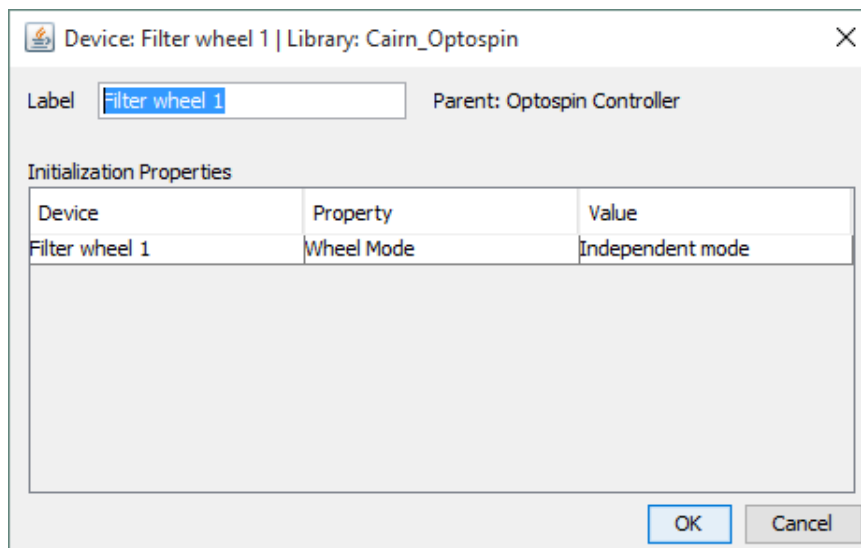
3. Select Optospin Controller | Optospin Hub device and click Add



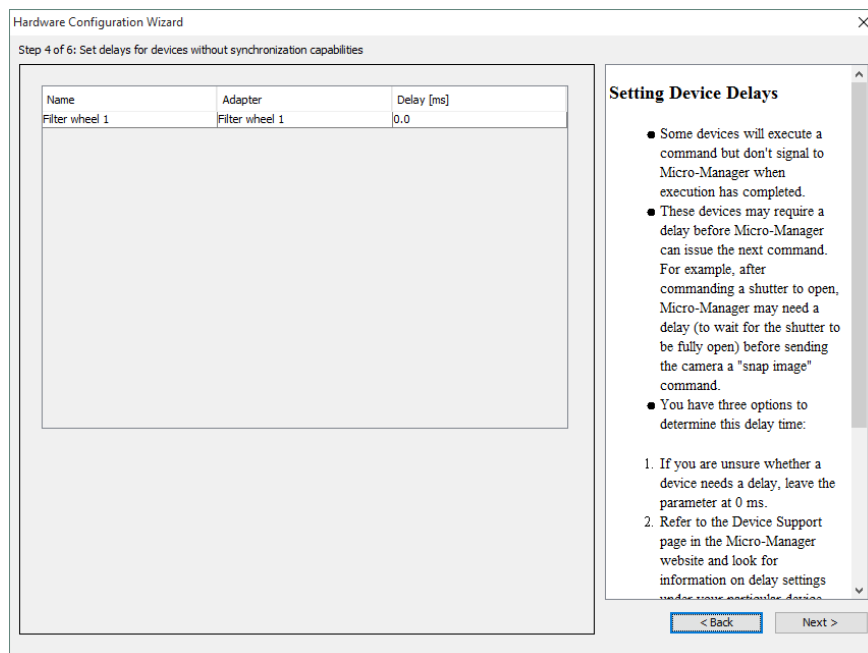
4. Click OK.



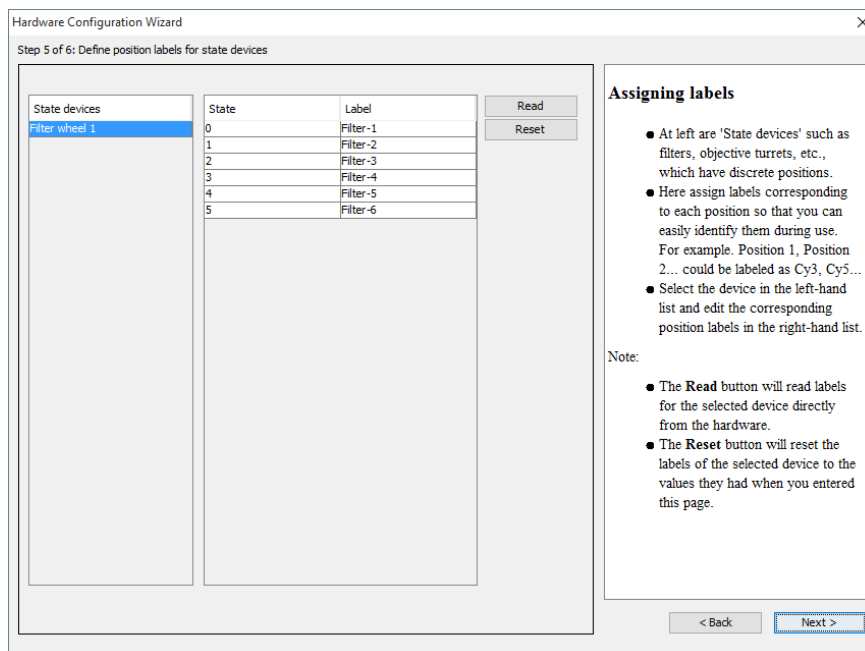
5. Check the Selected option for the filter wheel present and click OK



6. Name the Wheel if required and click OK

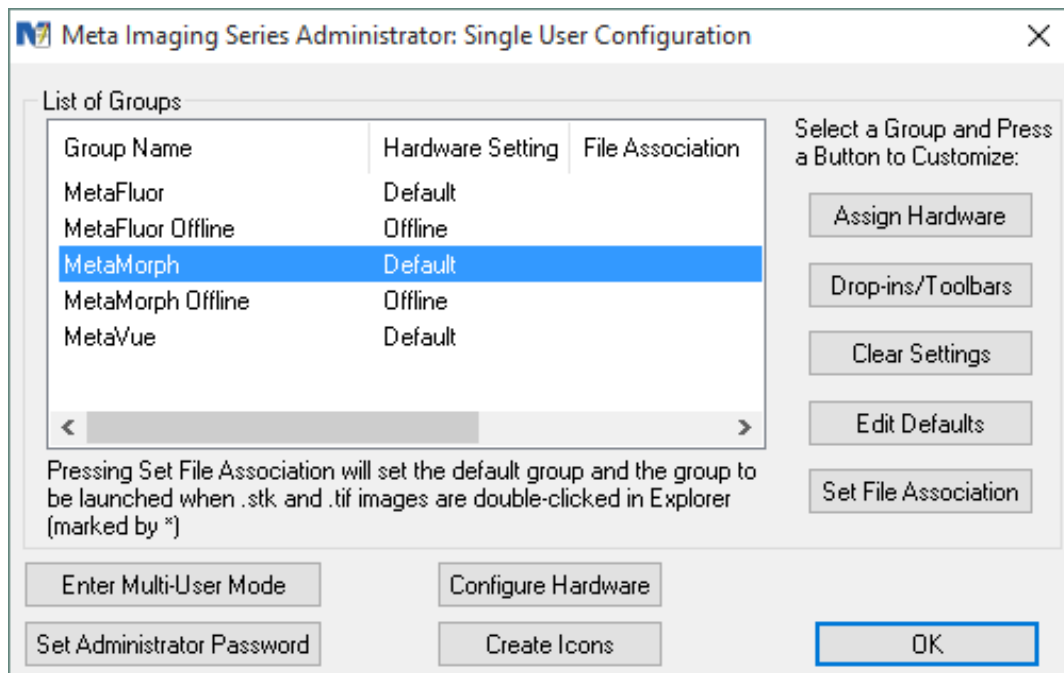


7. Click Next until you reach page 4 of 6, this allow you to add any Delays to the Filter wheel if required.

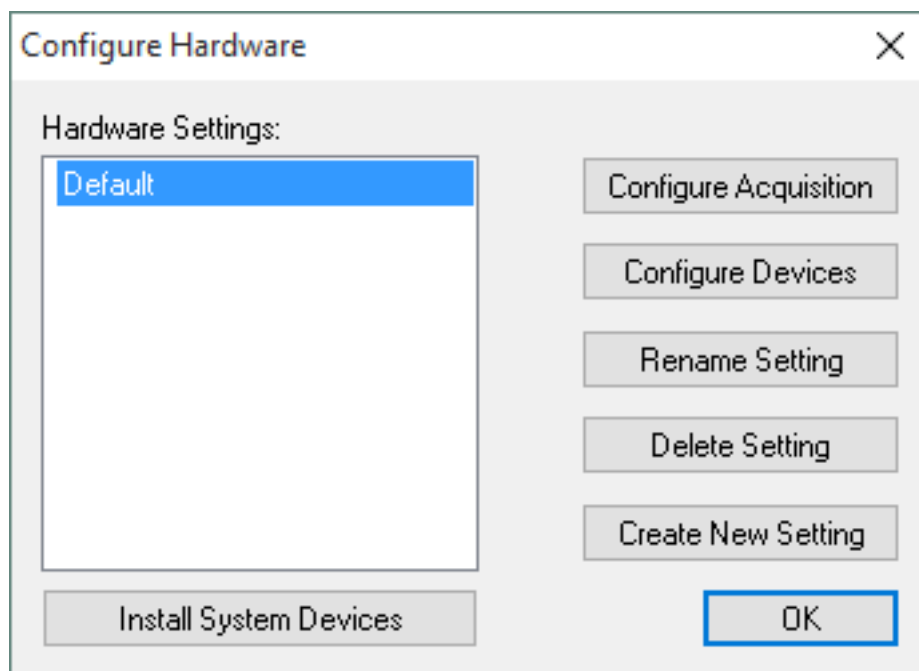


8. Page 5 of 6 allows you to add names for each filter position.

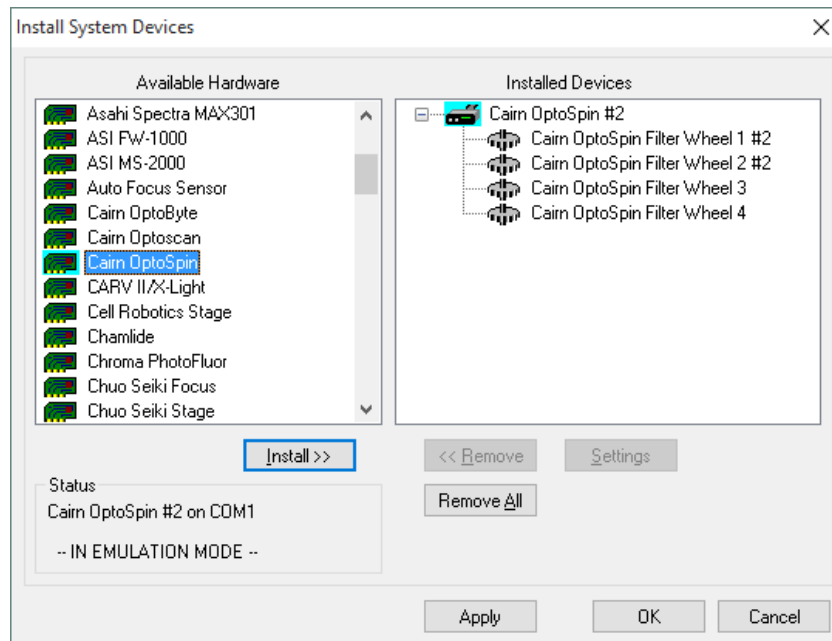
MetaMorph



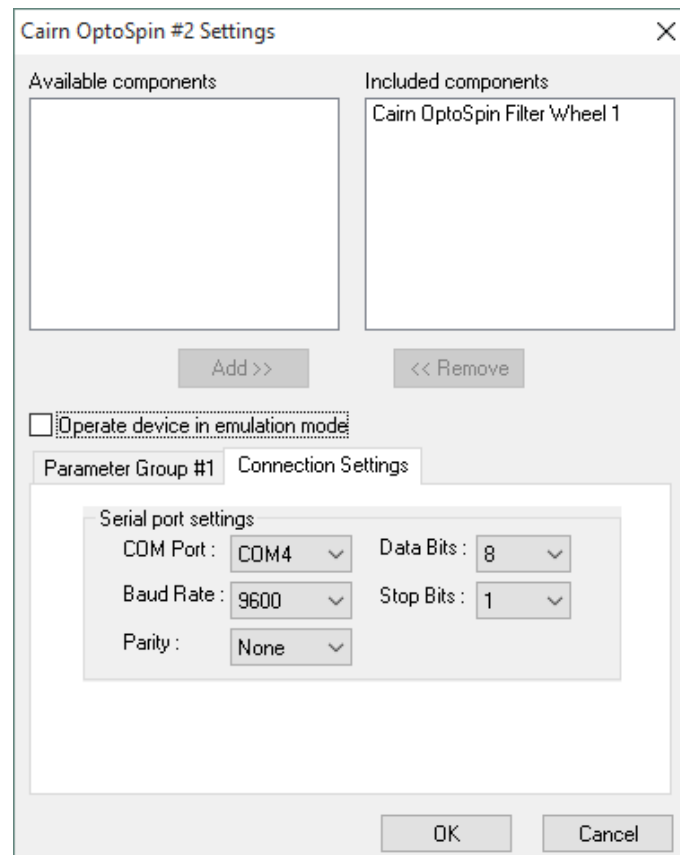
1. Run the Meta Imaging Series Administrator software, select MetaMorph and click on Configure Hardware.



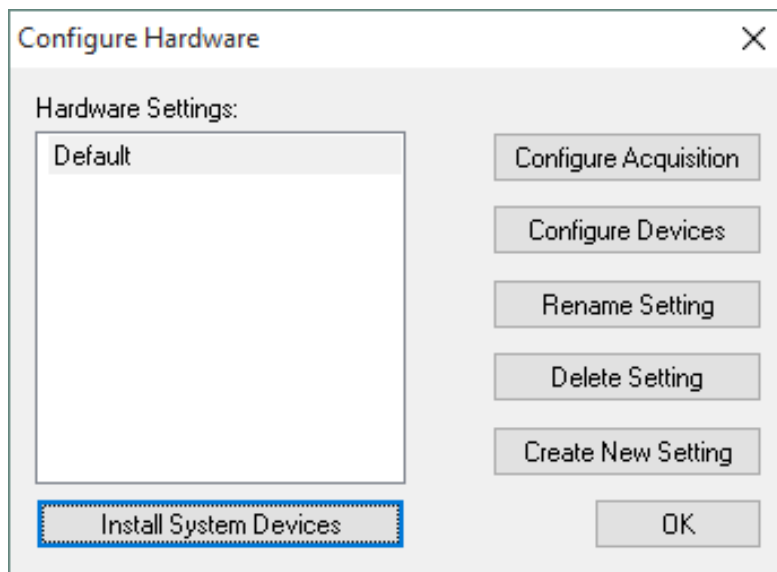
2. Click on Install System Devices



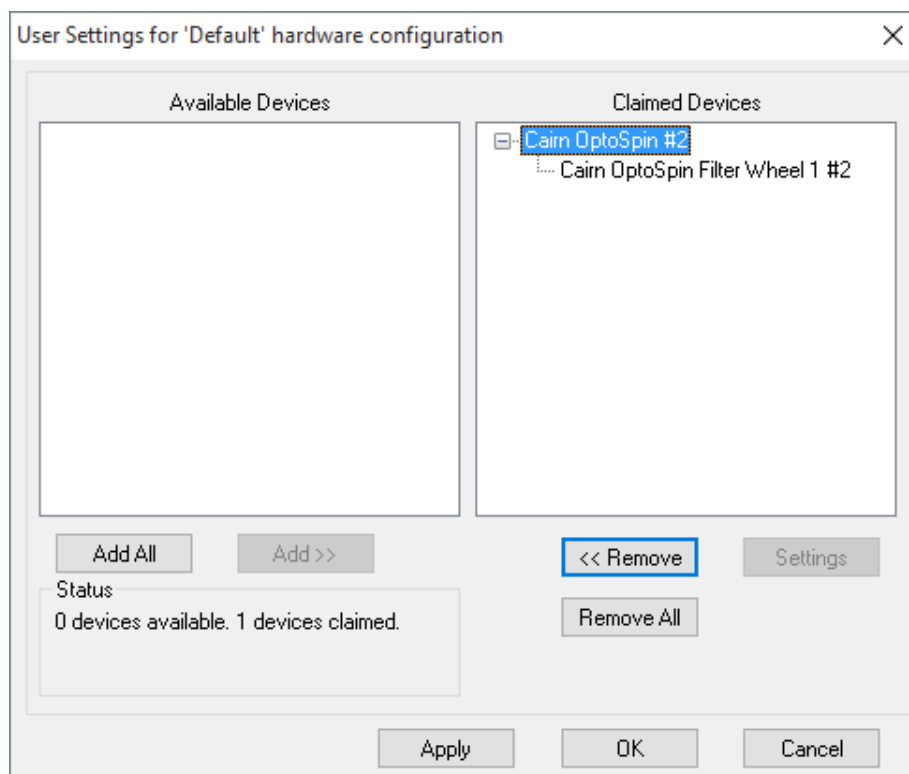
3. Select Cairn optospin from the dropdown menu on the left and click Install.
4. Select the Cairn Optospin that has been added to the right hand section and click Settings



5. Go to the Connection settings tab and select the COM Port the Optospin was installed on, uncheck Operate device in emulation mode if necessary, and click OK.
6. Click Apply then OK on the previous dialog.

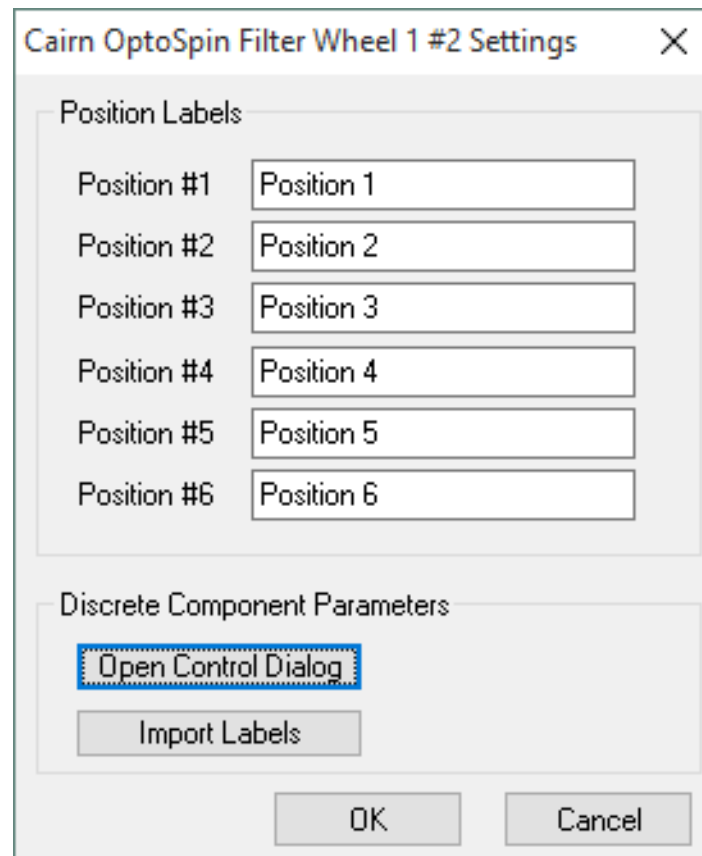


7. Click on Configure Devices

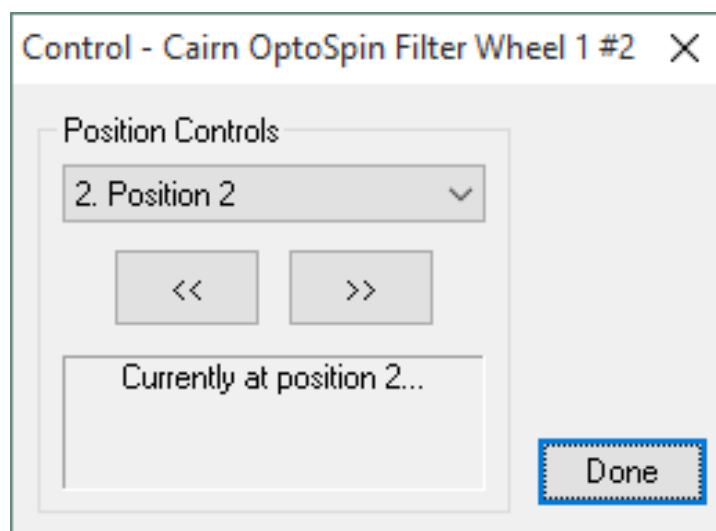


8. Select the Cairn Optospin in the Available Devices section and click Add >>

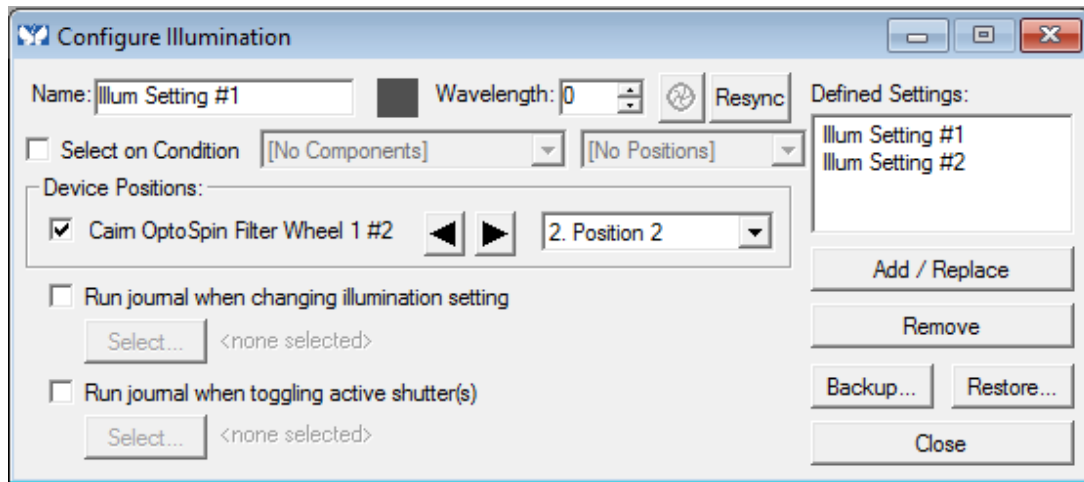
9. Select Cairn Optospin Filter Wheel (n) and click settings



10. On this dialog box you can name the filter positions.
11. Click on Open Control Dialog



12. This allows you to test the functionality of the Optospin by changing the positions using either the Position Controls or the forwards and backwards arrows.

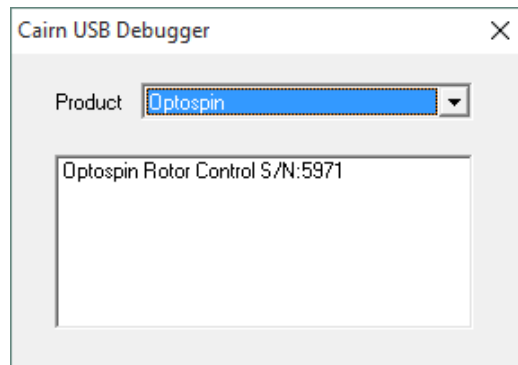


13. In MetaMorph click on Configure Illumination under the Devices dropdown menu.

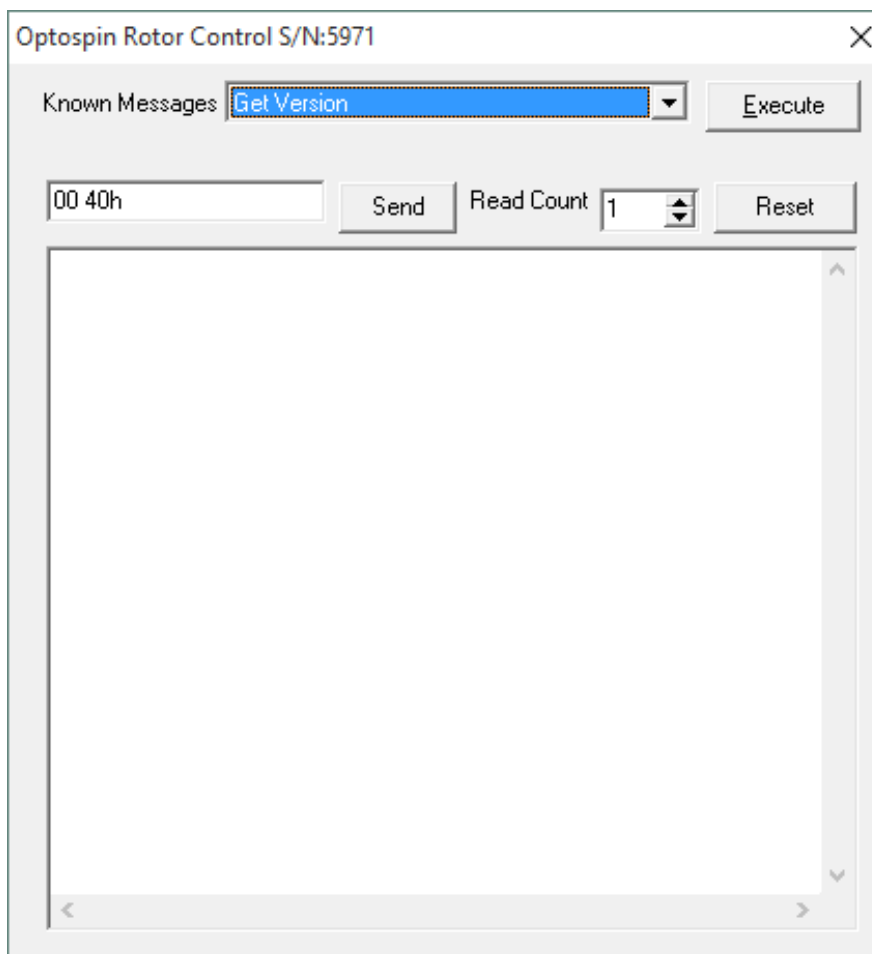
14. This dialog allows you to add various filter positions as Illumination Settings within MetaMorph.

PIC Test Software

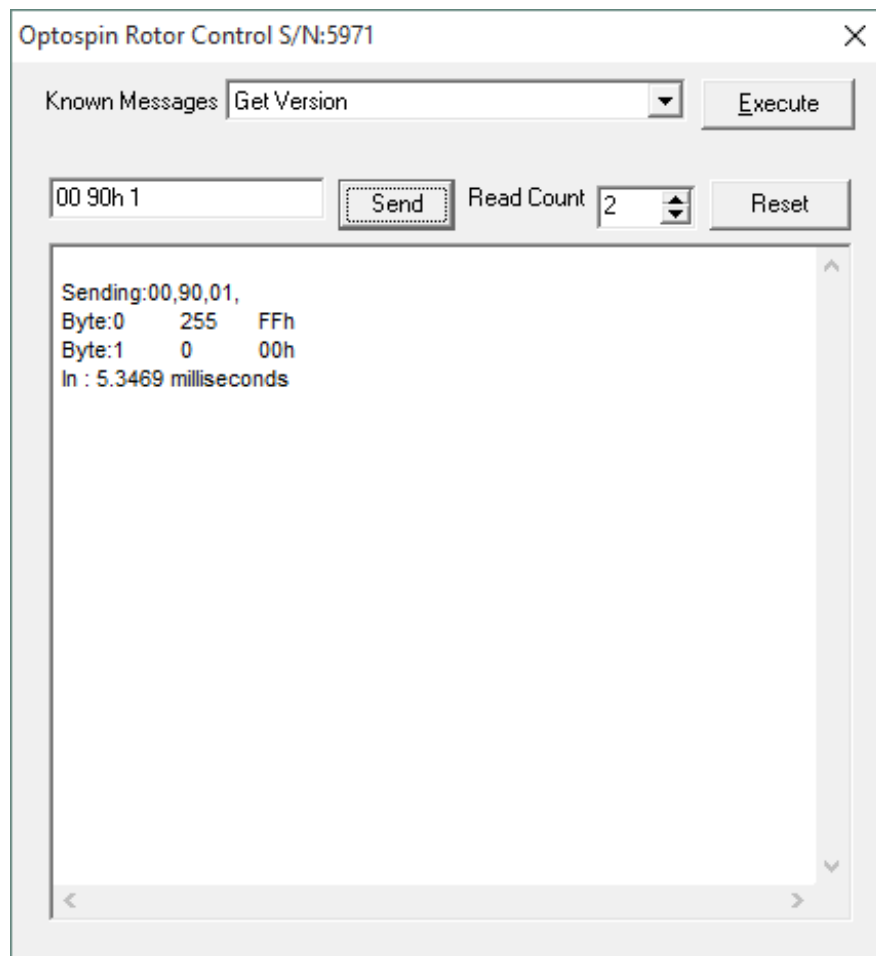
The PIC Test software works in conjunction with the OptospinUSBMay2015.doc document, this contains the usb commands to control various aspects of the Optospin.



1. Run the PICTest.exe file and select the Optospin from the dropdown menu, then double click on the Optospin Rotor Control S/N: 5971



2. This page allows you to select from a list of common Known Commands and click Execute to run them.



3. Commands can also be entered into the Command box and run by clicking Send.

STEP_CW (00 90h) (n1 --)

The data byte selects which filterwheels are to step one filter position clockwise (i.e. to the next higher filter number or on around to filter 1 again), with bits 0-3 specifying filterwheels 1-4 respectively. This command is potentially useful for test purposes, and the filterwheels are always controlled individually.

4. The Page above shows the result of a Step_CW command (Shown above) the Command 00 90h 1 is entered into the box to request that wheel 1 steps one step Clockwise., the n1 is the byte that is added following the command. The read count denotes the number of bytes returned from the optospin, the 2 dashes – show us that 2 bytes are returned. As a rule of thumb for commands that are actions require 2 read bytes and request commands require 4.

The white pane shows the result of the Sent command, the first 2 bytes denote whether the command has been sent successfully. (See the OptospinUSBMay2015 document for a more detailed description.)