The Cairn Shutter Controller 6 is a small compact device for controlling up to 6 TTL devices in the MicroManager software.

guide

Set

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To use the controller device, a running version of MicroManager will be required, we recommend using 2.0.0 which will be on the supplied memory stick or can be obtained from here : https://download.micro-manager.org/release/2.0/Windows/MMSetup_64bit_2.0.0.exe

Download/run and install with the default options enabled, in the last step, uncheck the box for opening MicroManager and click finish.

Once MicroManager is installed, if the computer is connected to the internet, nothing else needs to be installed*.

If the computer is offline, a secondary driver needs to be installed which will be on the memory stick, or downloadable from here : https://www.arduino.cc/en/software

Install this software with default options enabled and click finish at the end.



This product uses an Arduino device and opensource code written by Nico Stuurman. Details and the source code can be obtained from here: https://micro-manager.org/Arduino#project-tutorials



Setting up the Shutter Controller in MicroManager

The next step is to plug the device in with the USB cable provided into an available USB port and run MicroManager.

If the shutter controller is being added to an existing configuration, start MicroManager with the correct file, if MicroManager has just been installed, a configuration file will not be available, so on the dropdown, select None and Ok.

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Under Devices, select Hardware Configuration Wizard.

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

Create or modify an existing configuration and select next.



Step 2 of 6: Add or remove devices Select devices from the "Available Devices" list to include in this configuration. Installed Devices: Name Adapter/Module Description Status Edit Core MMCore/Default Core controller Default Peripherals Core MMCore/Default Core controller Default Peripherals Available Devices: List by Module Remove Available Devices: List by Module Adda(n) Adda(n) Anascope Addinass Addin Addin Addinass Addinass Addinass Addinass Addinass Addinass <th>🖞 Hardware Co</th> <th>onfiguration Wizard</th> <th></th> <th></th> <th></th> <th></th> <th>×</th>	🖞 Hardware Co	onfiguration Wizard					×
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In the lost, locate Arduino and expand this and select Arduino Hub and click Add, when prompted, select the devices COM port.

ዿ Device: Arduino-Hub;	Library: Arduino	×
Device name: Arduino-Hub Initialization Properties		
Device Arduino-Hub Arduino-Hub	Property Logic Port	Value Normal COM13 COM12 TCP/IP selval port adapter (1)
Port Properties (RS232 Settir	ngs)	Scan Ports



If you are unsure of the COM device number, you can find this under ports in Windows Device Manager



🛃 Device: Arduino-Hub; L	ibrary: Arduino	×	
Device name: Arduino-Hub			
Initialization Properties			
Device	Property	Value	1
Arduino-Hub	Logic	Normal	1
Arduino-Hub	Port	COM13	
Port Properties (RS232 Setting	is)	Scan Ports	
Port Properties (RS232 Setting	s) Property	Scan Ports	
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Once the COM port has been selected, some advances settings will show, the only setting that needs to be changed is the Baud Rate - set this to 57600 and press Ok.



An additional window will pop up, select the box for the top two boxes and select ok.

Peripheral Devices Setup				
HUB (parent device):	Arduino-Hub			
Name	Adapter/Library	Description	Selected	
Arduino-Switch	Arduino-Switch/Ard	Digital out 8-bit		
Arduino-Shutter	Arduino-Shutter/Ard	Shutter		
Arduino-Input	Arduino-Input/Arduino	ADC		7
Arduino-DAC1	Arduino-DAC1/Arduino	DAC channel 1		
Arduino-DAC2	Arduino-DAC2/Arduino	DAC channel 2		
			ОК	Cancel

That's the setup complete, click next thorough the steps and give the configuration a new name, or save to your existing config.





🛓 Micro-Manager	2.0.0			-		×
File Tools Devices	Plugins Window Help					
Profile: Default User		Config File: C:\Program File	s\Micro-Manage	r-2.0\Shu	tterContr	oller6.cfg
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Multi-D Acq.	Binning V					
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	⊕ [¶] ■ //	Group:	Edit Preset:	+ I	- I	Edit
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Find the Group options and select the plus icon +.

🛃 Group Editor			_	×
	Specify properties in this co	nfiguration g	roup:	or
	Group name: ShutterContro	oller		Cancel
Device type:	Property Name	Use in G	Current Proper	ty Value
All None	Arduino-Hub-Name		Arduino-Hub	
🔽 cameras	Arduino-Hub-Version		2	
shutters	Arduino-Switch-Blank On		Low	
	Arduino-Switch-Blanking Mode		Off	
stages	Arduino-Switch-Description		Arduino digital o	utput driver
🔽 wheels, turrets, etc.	Arduino-Switch-HubID			
🗸 other devices	Arduino-Switch-Label		0	
	Arduino-Switch-Name		Arduino-Switch	
Device or property name	Arduino-Switch-Sequence		Off	
Clear	Arduino-Switch-State		0 4	Þ
	Arduno-shutter-bescription		Arduino shutter	driver
Property type:	Arduino-Shutter-HubID			

Give the group a name and tick the box for "Arduino-Switch-State" and press Ok.



🛃 Micro-Manager	2.0.0			_		×
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A new group will be added, and from this presets can be added, this is where each channel can be labelled and the "On Value" added. Refer to the table below, you will need to repeat these steps for each digital line.

Shutter Channel BNC	Arduino-Switch-State Preset Value
Digital Out 1	1
Digital Out 2	2
Digital Out 3	4
Digital Out 4	8
Digital Out 5	16
Digital Out 6	32
All ON	63
All OFF	0



<u>k</u> Micro-Manager	2.0.0		_	
File Tools Devices	Plugins Window Help			
Profile: Default User		Config File: C:\Program Fil	es\Micro-Manager-2.0\Sh	utterController6.cfg
💟 Snap	Imaging settings	Configuration settings		Save
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🤣 Refresh	Shutter Arduino-Shut 🗸			
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ROI	Stage Autofocus			
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