

User Manual

Micro-Manager Device Adaptors for Prizmatix LED Illuminators

Ver. 1.0

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1 Introduction

Micro-Manager (μ Manager) is a popular free open source software package for control of automated microscopes. Together with the image processing application ImageJ, μ Manager provides a comprehensive, freely available, imaging solution.

Prizmatix LED light sources such as UHP-T-LED, UHP-F-LED and UHP-M series are in extensive use in various microscopy applications. This user manual describes how to install drivers and device adapters to enable the use Prizmatix LED products with μ Manager software.


2 Safety


2.1 General safety

Please make yourself familiar with the contents of these operating instructions before using the Prizmatix LED illuminator with the software.

For specific safety instructions please refer to the Safety chapter at the user manual of the specific Prizmatix product.

The following symbols are used for the warnings:

 **CAUTION!** Failure to comply with the safety instructions can be hazardous to the user.

 **CAUTION!** Failure to comply with the safety instructions can result in damage to the instrument.

Prizmatix products are NOT authorized for use as components in life support devices or systems.

3 Device Setup

Remove the device from the packaging and inspect the device for loose components or any signs of damage. Notify Prizmatix if the device appears damaged in any way: do not install or operate a damaged device.



The installation procedure of Prizmatix LED illuminator with USB control by Prizmatix software and / or μ Manager software comprises of three steps:

- Setup of Prizmatix LED Control software for Windows
- Setup of USB Device Drivers
- Setup of μ Manager Device Adaptors

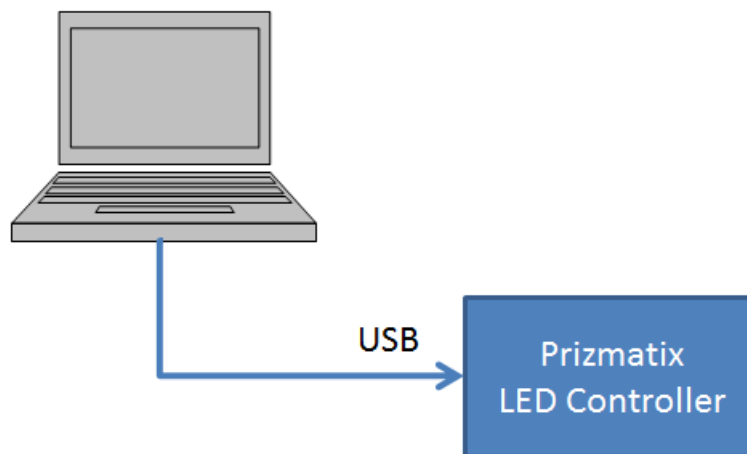
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3.1 Package contents list

The USB enabled Prizmatix LED system can come in various system configurations.

Software Installation CD	USB-A to USB-B Cable
	

	Item	Description	Quantity
1	USB Cable	USB Type-A to USB Type-B cable for connection of USB unit to PC	1
2	CD with Software	Software and Drivers CD - Please download additional software drivers as described in the installation section	1



Connection of the Prizmatix LED CTRL to the computer

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3.2 Prizmatix LED Control software for Windows Setup

Please refer to the specific LED illuminator user manual for installation instructions for Prizmatix LED control software.

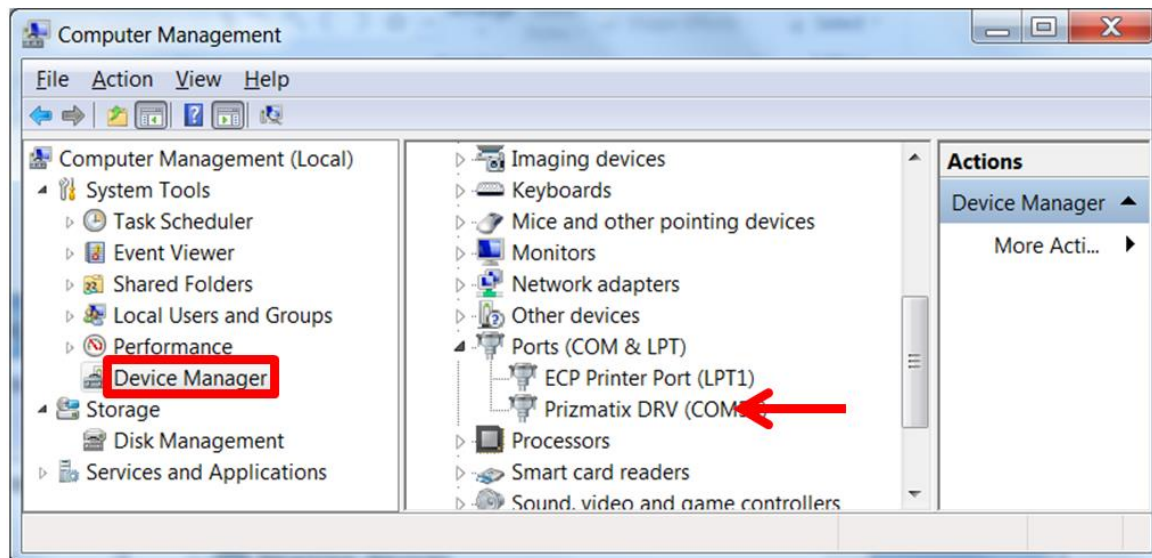
3.3 USB Device Drivers setup

Please refer to the specific LED illuminator user manual for the Device Drivers installation instructions of specific Prizmatix LED illuminator product.

3.4 μ Manager Device Adaptors setup

3.4.1 Checking the COM Port

Before setting up the μ Manager Device Adaptors Please open the Device Manager (right click on the My Computer icon on the desktop and choose "Manage" from the list) and check that the Prizmatix DRV device appears in the list on the right panel. Write down the COM port number (100 in this example) it will be useful later.



3.4.2 Copying the Device Adaptor Files

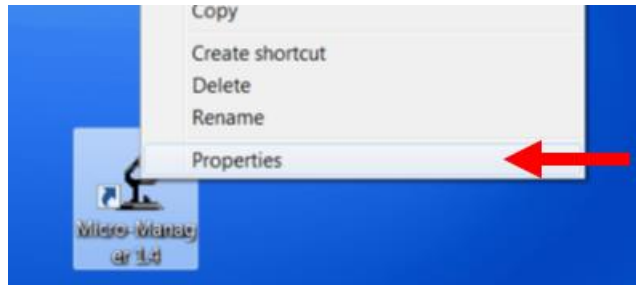
The Device Adaptors files can be found at
C:\Program Files(x86)\Prizmatix LED CTRL\ μ Manager_Device_Adaptors\
folder. The files are:
mmgr_dal_Prizmatix_LED.dll
msvcp100.dll
msvcp100d.dll
msvcr100.dll
msvcr100d.dll

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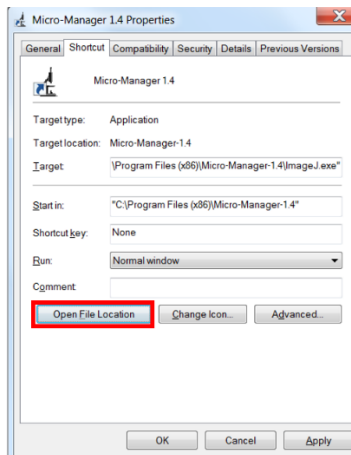
Please copy these files into μ Manager folder:

C:\Program Files (x86)\Micro-Manager-1.4\

Note: You can easily find the μ Manager folder in following way:
Right click the μ Manager icon on the Desktop



Select Properties from the menu. In the Properties dialog box press the “Open File Location” button



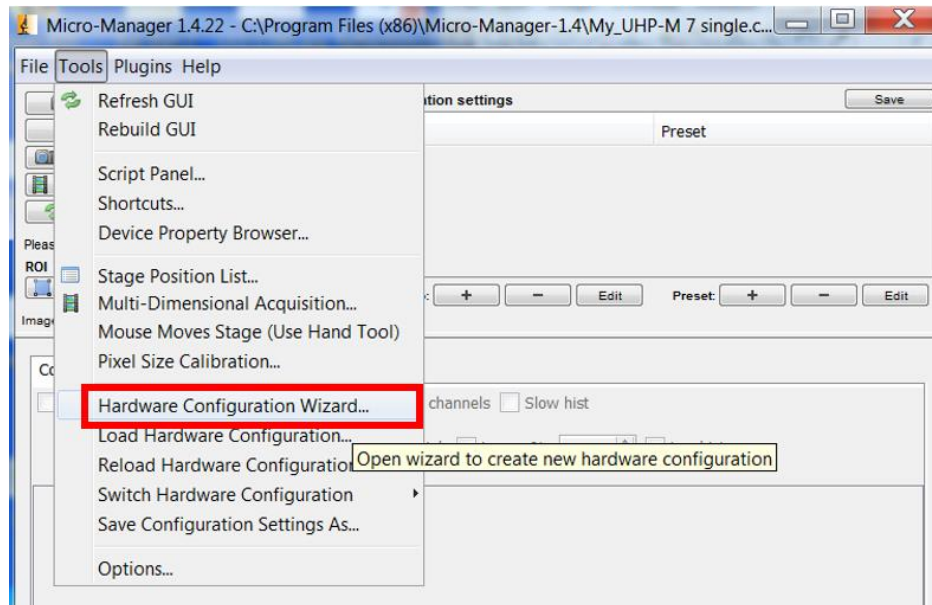
The μ Manager folder will be displayed.

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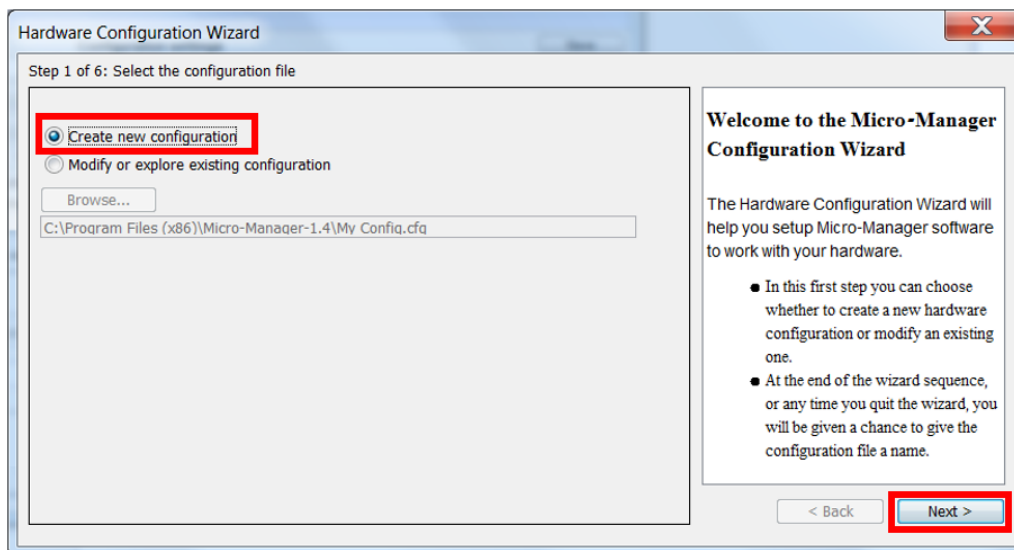
3.4.3 Hardware Configuration Wizard

In order to use the hardware from the μ Manager software the device needs to be configured via the Hardware Configuration Wizard.

Open the μ Manager software and choose the Hardware Configuration Wizard from the “Tools” menu.

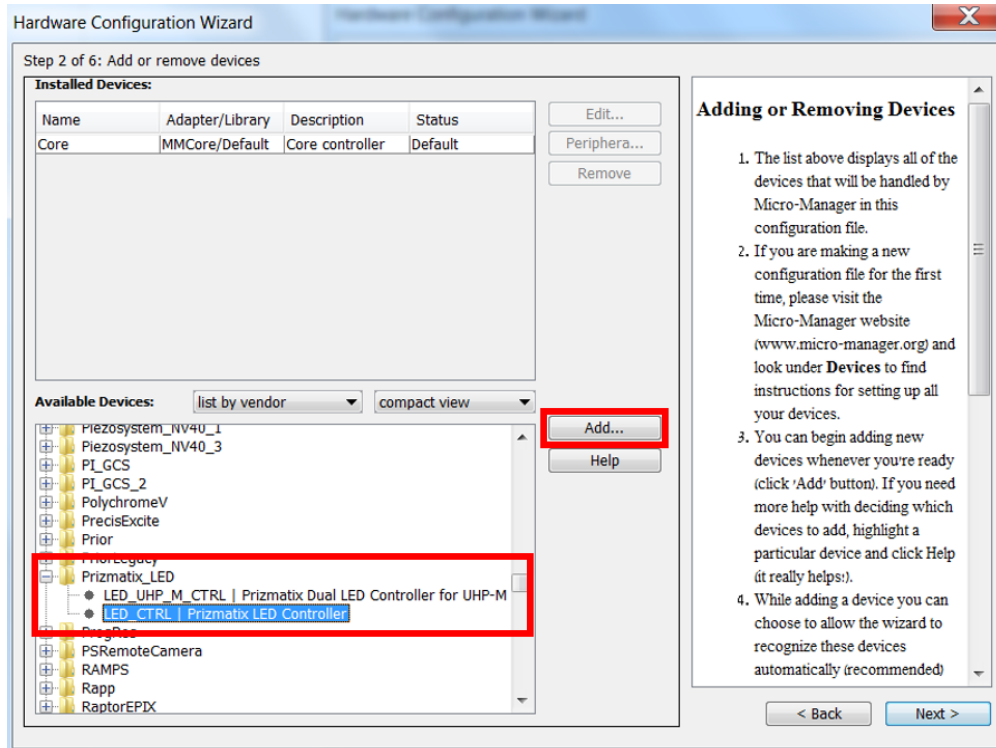


In the Hardware Configuration Wizard dialog box, select “Create new configuration” and click Next.

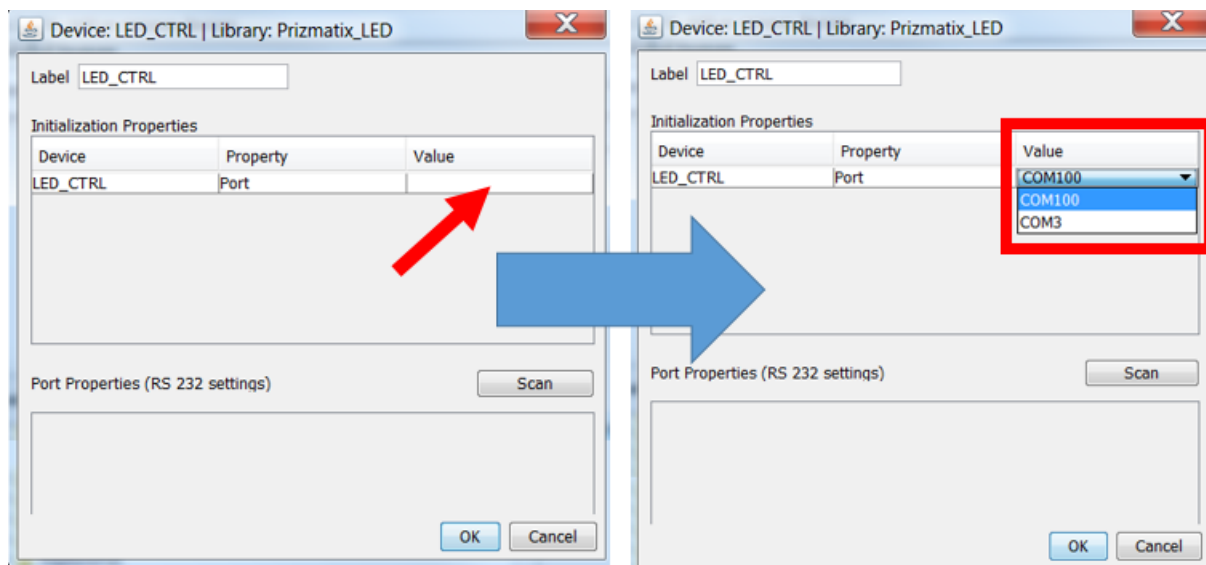


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In the next screen, select “Prizmatix_LED” from the Available Devices list. Click on plus (+) to expand the list of available devices, select the device and click the “Add...” button.

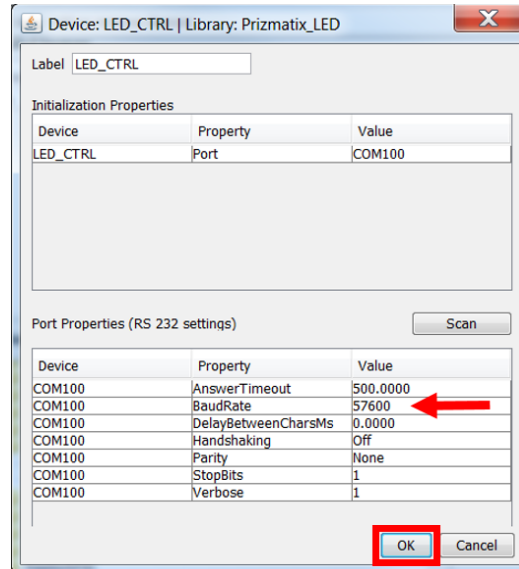


A New dialog box will be displayed. Click on the empty field in the Value column and choose the COM Port from the first step (device manager).

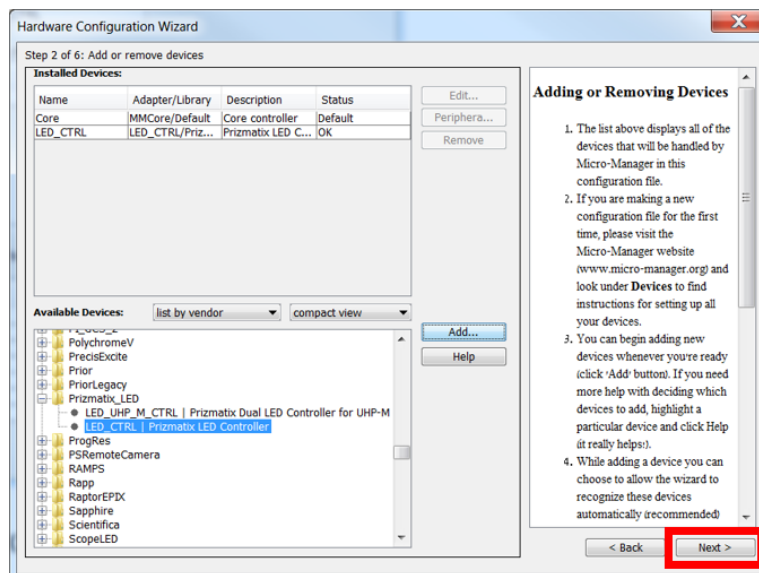


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The Port Properties (RS 232 settings) table will be automatically populated. Check that the settings are same as the picture below – especially the value of BaudRate=57600



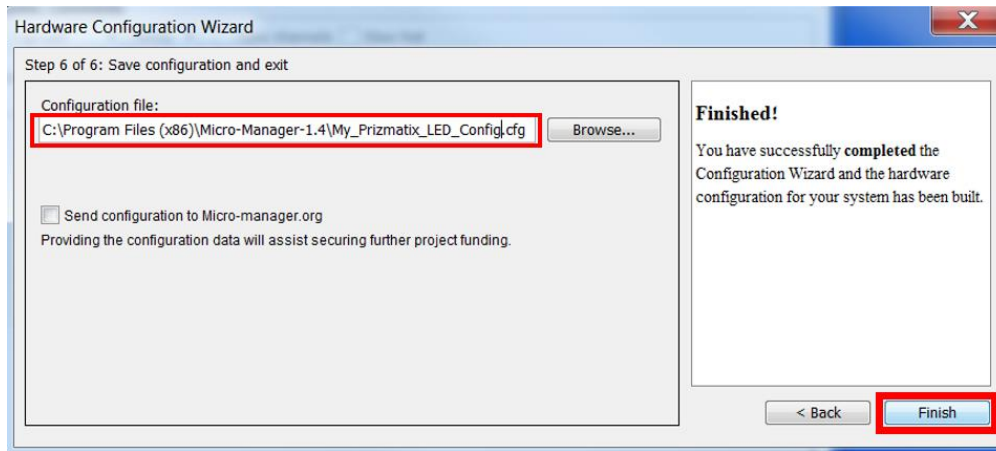
Click OK to proceed.



Click OK on the next 4 screens (Steps 2, 3, 4 and 5) to proceed.

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On the last step, type-in a new configuration file name and click Finish.

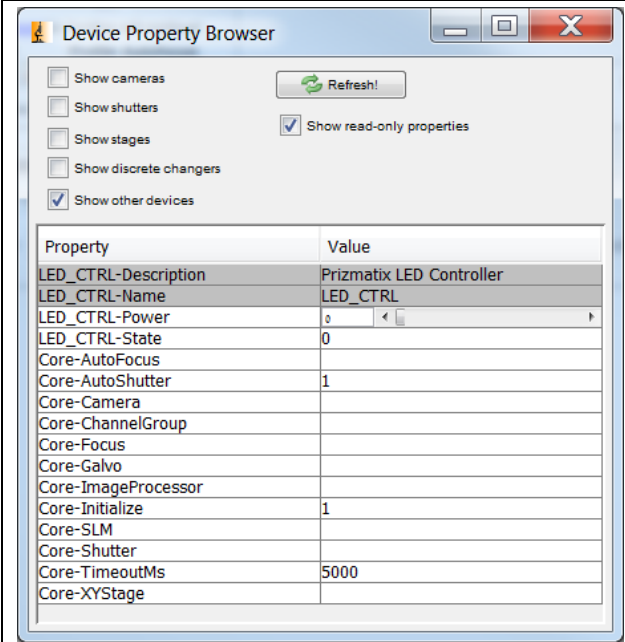
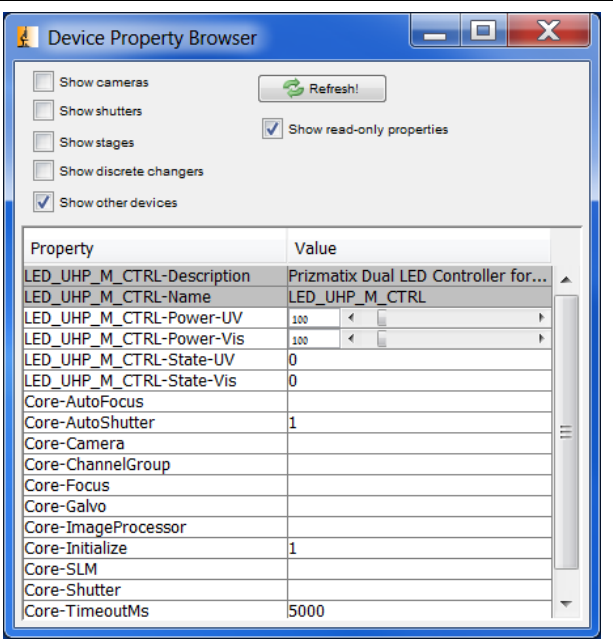


The configuration process has been finished successfully. You can now use the device. There are several ways to use hardware devices with μ Manager. We will demonstrate the easiest way – through the Device Property Browser

3.5 Using Prizmatix_LED Devices

3.5.1 Using through the Device Property Browser

Choose Device Property Browser from the Tools menu, The following dialog box will be displayed.

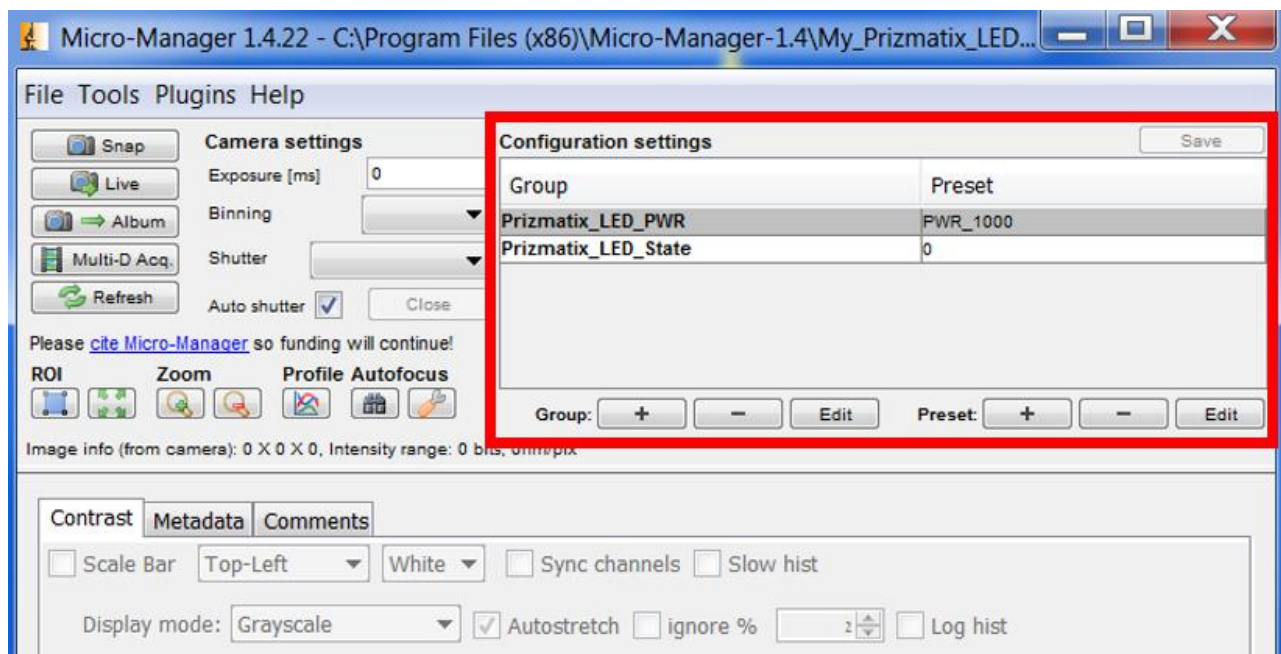
 <table border="1"><thead><tr><th>Property</th><th>Value</th></tr></thead><tbody><tr><td>LED_CTRL-Description</td><td>Prizmatix LED Controller</td></tr><tr><td>LED_CTRL-Name</td><td>LED_CTRL</td></tr><tr><td>LED_CTRL-Power</td><td>0</td></tr><tr><td>LED_CTRL-State</td><td>0</td></tr><tr><td>Core-AutoFocus</td><td></td></tr><tr><td>Core-AutoShutter</td><td>1</td></tr><tr><td>Core-Camera</td><td></td></tr><tr><td>Core-ChannelGroup</td><td></td></tr><tr><td>Core-Focus</td><td></td></tr><tr><td>Core-Galvo</td><td></td></tr><tr><td>Core-ImageProcessor</td><td></td></tr><tr><td>Core-Initialize</td><td>1</td></tr><tr><td>Core-SLM</td><td></td></tr><tr><td>Core-Shutter</td><td></td></tr><tr><td>Core-TimeoutMs</td><td>5000</td></tr><tr><td>Core-XYStage</td><td></td></tr></tbody></table>	Property	Value	LED_CTRL-Description	Prizmatix LED Controller	LED_CTRL-Name	LED_CTRL	LED_CTRL-Power	0	LED_CTRL-State	0	Core-AutoFocus		Core-AutoShutter	1	Core-Camera		Core-ChannelGroup		Core-Focus		Core-Galvo		Core-ImageProcessor		Core-Initialize	1	Core-SLM		Core-Shutter		Core-TimeoutMs	5000	Core-XYStage		 <table border="1"><thead><tr><th>Property</th><th>Value</th></tr></thead><tbody><tr><td>LED_UHP_M_CTRL-Description</td><td>Prizmatix Dual LED Controller for...</td></tr><tr><td>LED_UHP_M_CTRL-Name</td><td>LED_UHP_M_CTRL</td></tr><tr><td>LED_UHP_M_CTRL-Power-UV</td><td>100</td></tr><tr><td>LED_UHP_M_CTRL-Power-Vis</td><td>100</td></tr><tr><td>LED_UHP_M_CTRL-State-UV</td><td>0</td></tr><tr><td>LED_UHP_M_CTRL-State-Vis</td><td>0</td></tr><tr><td>Core-AutoFocus</td><td></td></tr><tr><td>Core-AutoShutter</td><td>1</td></tr><tr><td>Core-Camera</td><td></td></tr><tr><td>Core-ChannelGroup</td><td></td></tr><tr><td>Core-Focus</td><td></td></tr><tr><td>Core-Galvo</td><td></td></tr><tr><td>Core-ImageProcessor</td><td></td></tr><tr><td>Core-Initialize</td><td>1</td></tr><tr><td>Core-SLM</td><td></td></tr><tr><td>Core-Shutter</td><td></td></tr><tr><td>Core-TimeoutMs</td><td>5000</td></tr></tbody></table>	Property	Value	LED_UHP_M_CTRL-Description	Prizmatix Dual LED Controller for...	LED_UHP_M_CTRL-Name	LED_UHP_M_CTRL	LED_UHP_M_CTRL-Power-UV	100	LED_UHP_M_CTRL-Power-Vis	100	LED_UHP_M_CTRL-State-UV	0	LED_UHP_M_CTRL-State-Vis	0	Core-AutoFocus		Core-AutoShutter	1	Core-Camera		Core-ChannelGroup		Core-Focus		Core-Galvo		Core-ImageProcessor		Core-Initialize	1	Core-SLM		Core-Shutter		Core-TimeoutMs	5000
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Device Adaptor for Prizmatix LED Controller (single channel device)	Device Adaptor for Prizmatix Dual LED Controller for UHP-M																																																																						

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The LED Power can be adjusted by changing the position of LED_CTRL-Power slider. this enables the use of the LED_CTRL-State as a shutter to switch the LED ON/OFF according to the power set by the slider.

3.5.2 Using the Configuration Presets

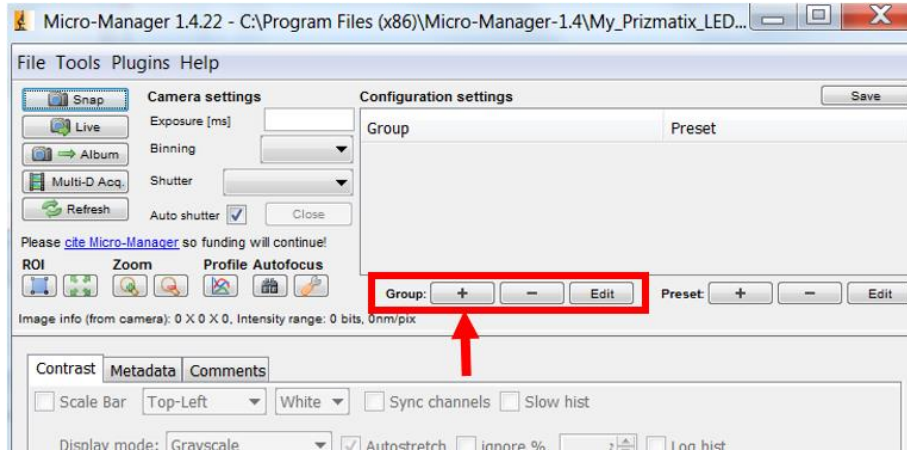
In order to simplify and streamline the usage of the devices μ Manager provides Configuration Presets. The presets appear in the μ Manager main window and are therefore very convenient to use. The figure below shows the Device Adaptor for Prizmatix LED Controller in the Configuration Presets area of μ Manager:



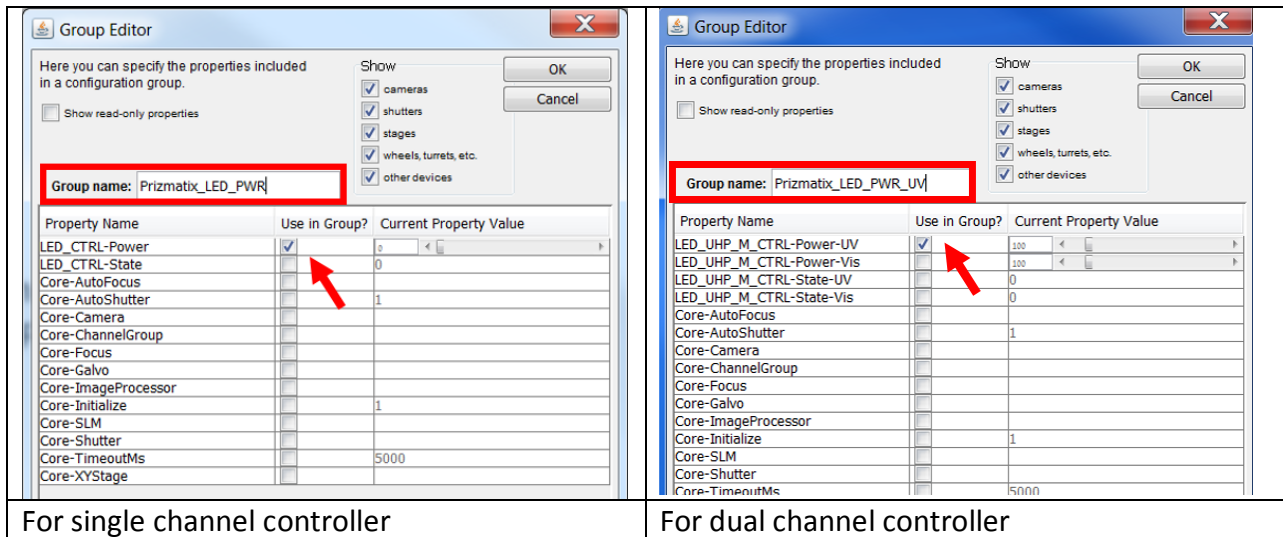
Note: Additional information regarding Configuration Presets can be found at Micro-Manager User's Guide Paragraph 5.2 Grouping device properties: Configuration Presets.

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To make a new configuration group (a new row in the **Configuration settings** table), click the Group '+' button at the bottom left of the Configuration Settings table.

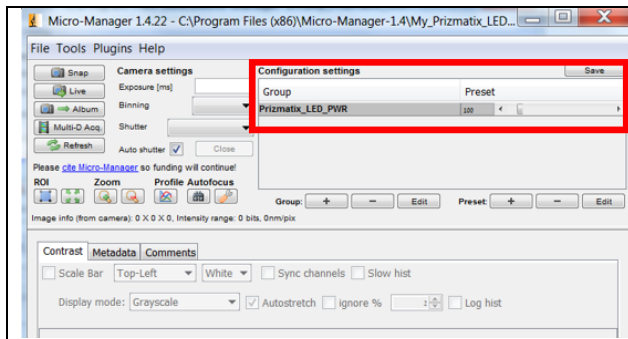


A **Group Editor** window will appear that looks similar to the Device/Property Browser, but has a third column called 'Use in Group?'. Check the box in the 'Use' column for any property that you want to be included in this configuration group. Give the Group a name (e.g. "Prizmatix_LED_PWR") and click OK.

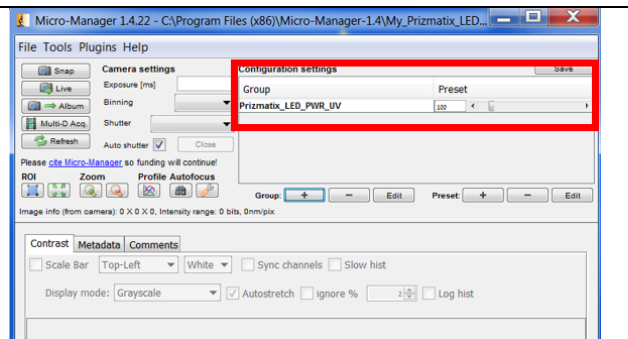


The new group Prizmatix_LED_PWR will appear at Configuration Presets table.

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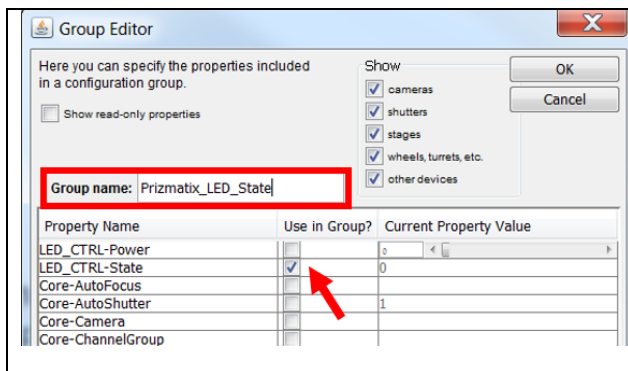


Single channel controller

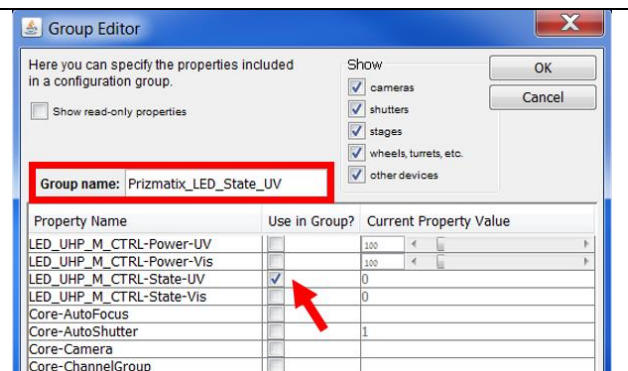


Dual channel controller. For Dual channel repeat this step for ...PWR_Vis

Repeat the above procedure to add Prizmatix_LED_State group

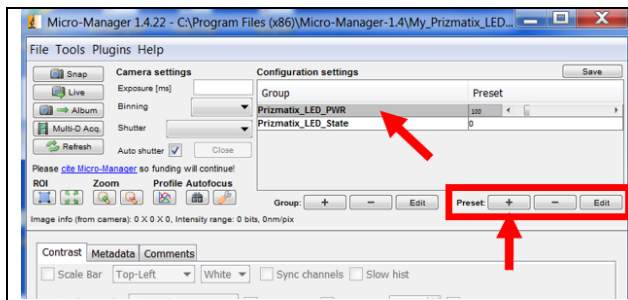


Single channel controller

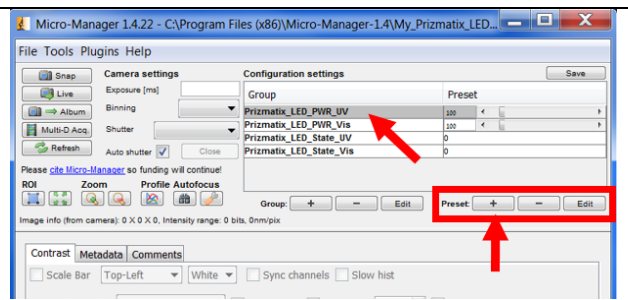


Dual channel controller. For Dual channel repeat this step for ...State_Vis

After these two steps you will have both types of controls ..._PWR and ..._State appear at Configuration Settings table.



Single channel controller

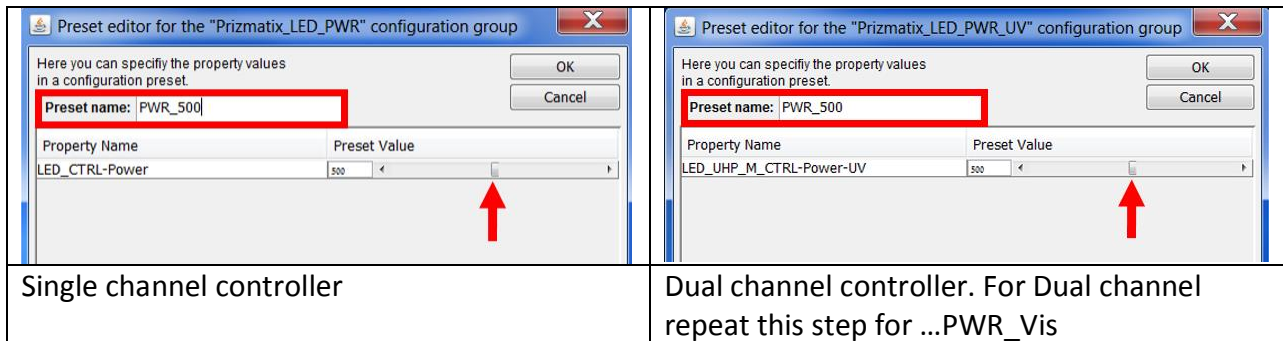


Dual channel controller.

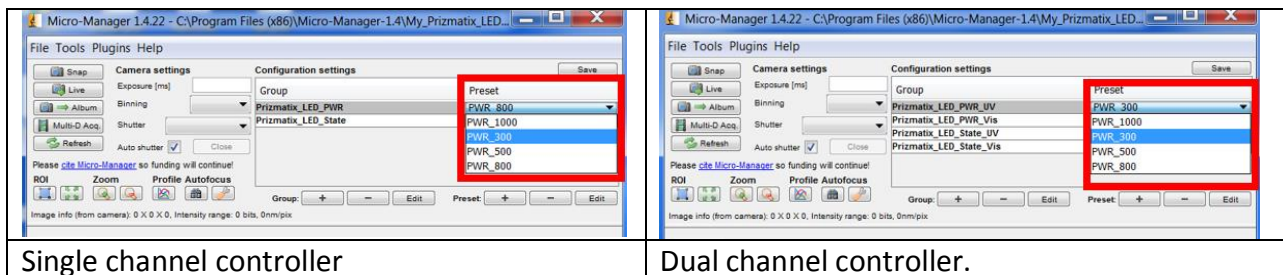
As you may have noticed the ..._State control already has two states: "0" and "1". We still need to configure the ..._PWR in control to several useful presets.

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To create a new presets for the group (such as ..._PWR slider), select the group (by clicking on the name of the group, “Prizmatix_LED_PWR” in this example), and click the Preset '+' button. The Preset Editor will appear.



The Preset Editor will only list the properties you selected for your new group. Set the position of the slider that you selected to the desired position, and name the Preset (for example “PWR_500”). Click 'OK', and you will have the first Configuration Preset in this group. To add Presets to the group, select the group and click the Preset '+' button. The Preset Editor will appear again for each new preset. The 'Configuration' column in the user interface will now be a dropdown menu, selecting an item from this menu will change the state of the ..._PWR.



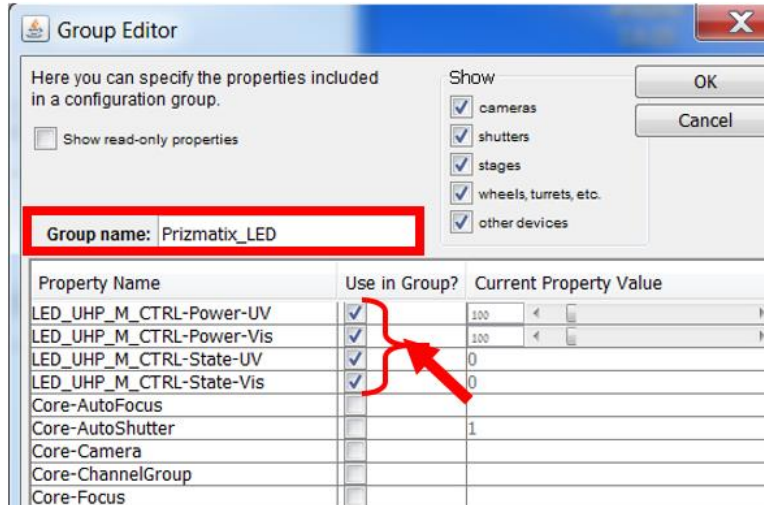
Once you are satisfied with your current presets they can be saved into the current configuration file (or a new one) by using "Save" button next to 'Configuration settings'. You can also save the presets to a previous configuration file. Next time you start up with that configuration file, your presets will be automatically loaded.

The 'Edit' and '-' (Delete) buttons allow you to change and remove Configuration Groups and Presets. If you add a property to a Group, then all existing Presets in that Group will now include the current value of the new Property.

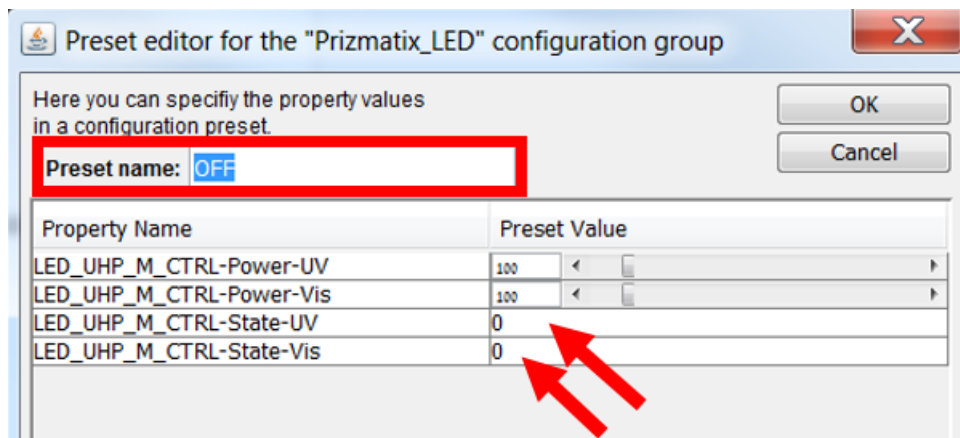
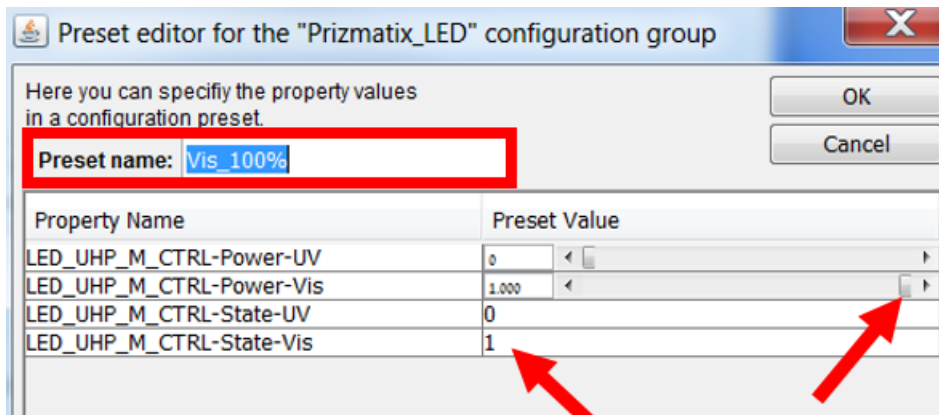
In some cases it may be more convenient to incorporate the Power and State to the same Group so a short-cut to specific state will be created. The following example is for dual channel controller

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Create a new Group at the Group editor dialog box; choose all 4 controls: Power-UV, Power-Vis, State-UV and State-Vis.



After pressing OK at the Group editor, the Preset editor dialog box will appear. Create a Preset name and select the required settings, for example:



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The final Configuration settings will look like:

