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Allied Vision Camera Adapter for
Micro-Manager

V1.0.0

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Introduction

This document describes how to use Allied Vision's Camera Adapter for Micro-Manager.

Contents:

- Compatibility
- Installation and configuration
- Image acquisition and feature handling
- Limitations and Troubleshooting

Compatibility and prerequisites

Tested cameras: Allied Vision GigE Vision and USB 3.0 Vision cameras.

Required Micro-Manager version: Please use a nightly build as of 2023-10-26 or later.
https://github.com/micro-manager/micro-manager.

The latest build for Windows is additionally available at:
https://download.micro-manager.org/nightly/2.0/Windows/

Required SDK for Allied Vision cameras:
Vimba X SDK (contains the transport layers for Allied Vision cameras and camera drivers for Windows).
As of this writing, Vimba X is available for Windows and Linux.

Tested operating systems:
Windows 10 (64-bit) and Ubuntu 22.04 (64-bit).

Installation and configuration

Installation

Windows:

- To install Vimba X for Windows, download the .exe file and follow the instructions provided in the installer.

- To build Micro-Manager from source, follow the instructions at:
  https://github.com/micro-manager/micro-manager/blob/main/doc/how-to-build.md

- To install the nightly build, follow the instructions at:
  https://micro-manager.org/Version_2.0_Users_Guide.

Linux:

- To install Vimba X for Linux, follow the instructions in the Release Notes at
  https://docs.alliedvision.com/.

- To build Micro-Manager from source, visit https://github.com/micro-manager/micro-manager/blob/main/doc/how-to-build.md

Configuration

Before using Micro-Manager, we recommend adjusting the camera features with Vimba X Viewer (make sure to close the camera before using Micro-Manager).

To configure Micro-Manager for usage with Allied Vision cameras:

1. Connect your Allied Vision camera.

2. Start Micro-Manager. Ignore the pop-up window and open Devices -> Hardware Configuration Wizard:
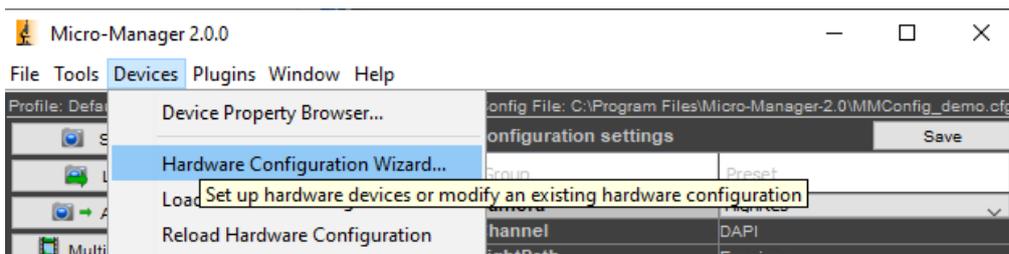
3. Create a new configuration:
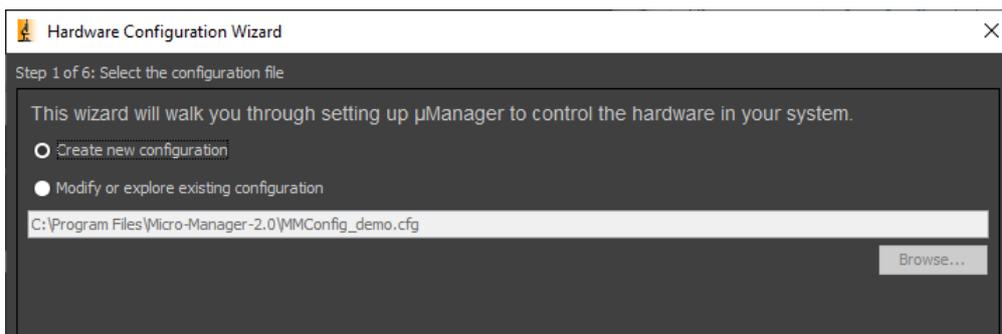
Allied Vision

4.   Select and add the Allied Vision Hub:
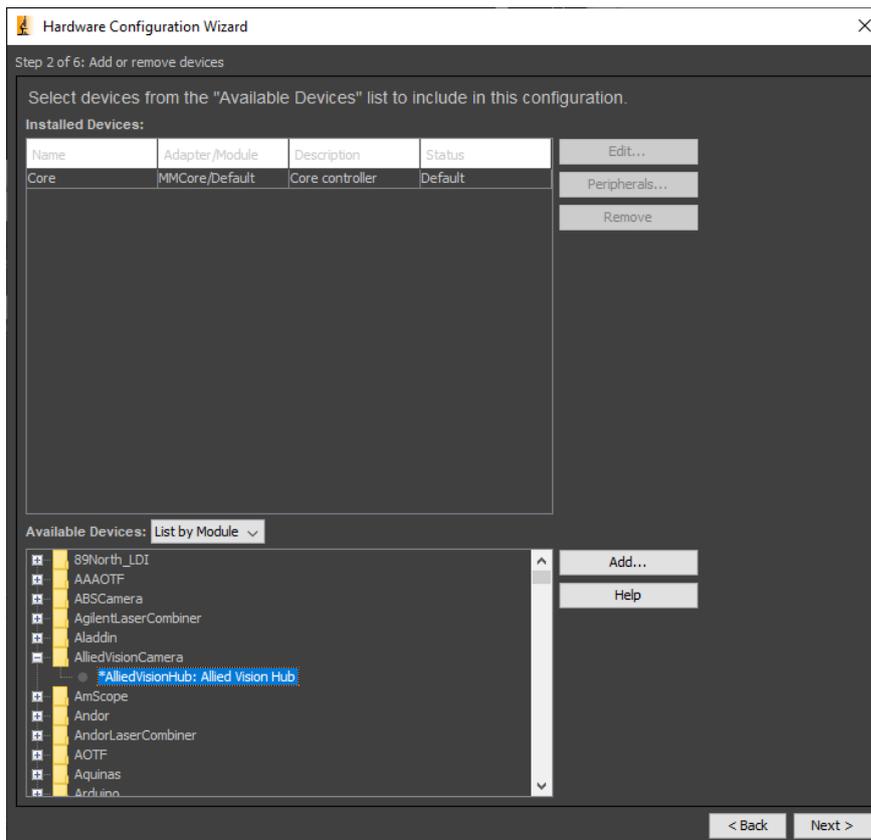
5.   Click Next.

6.   The Peripheral Device Setup Window opens. Select your previously connected Allied Vision camera that you want to use with Micro-Manager and click OK:
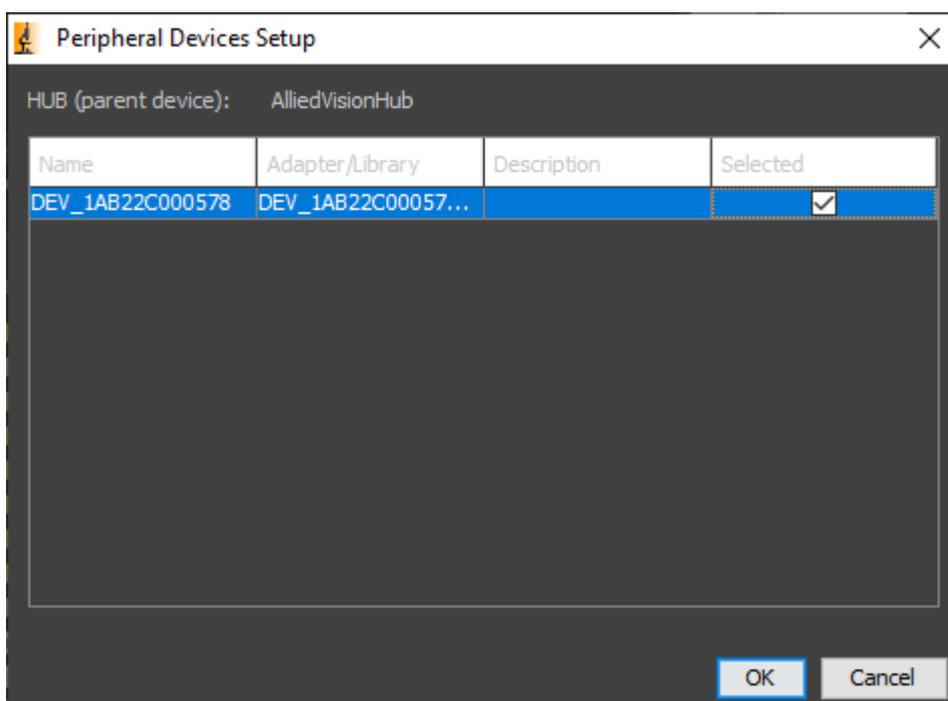
7. If you use multiple cameras at the same time, select the Default Camera and click Next:
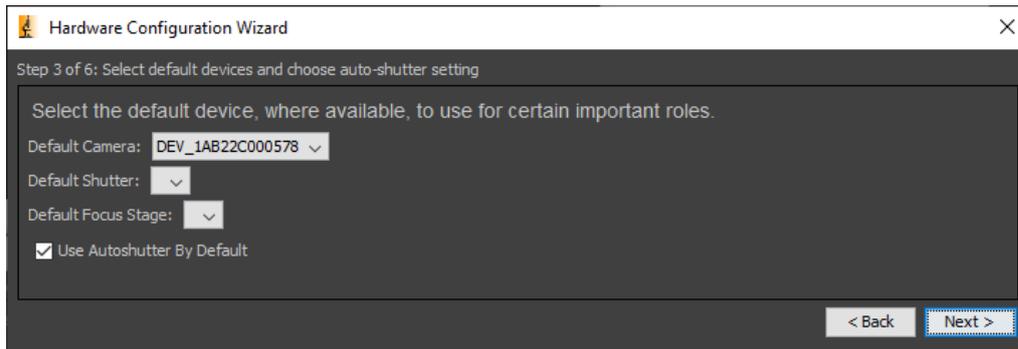
8. Save your configuration. If you only want to configure your Allied Vision camera, you can skip steps 4 and 5 of the Hardware Configuration Wizard.

Now the installation and configuration is complete and you can start image acquisition.

Image acquisition and feature handling

To acquire images with Micro-Manager and configure your Allied Vision camera:

1. Upon Micro-Manager start, select the configuration for your Allied Vision camera.

2. To acquire images, click Live View.

3. To adjust camera features, open the Device Property Browser:
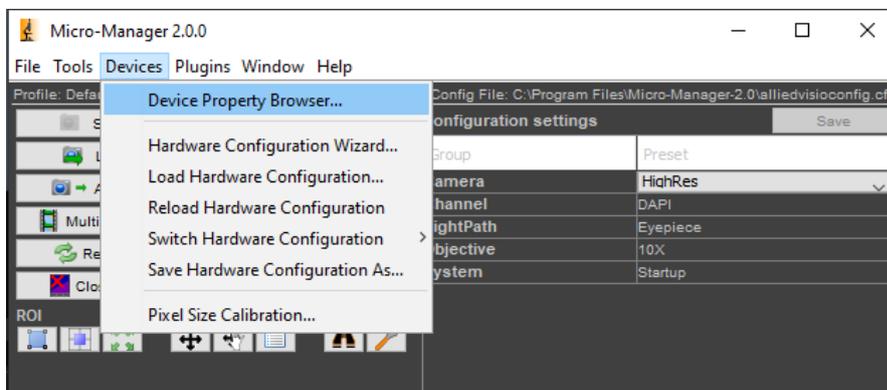
Limitations and troubleshooting

GigE camera performance: Select, install, and configure your host adapter as described in the corresponding manual for your camera (activate jumbo frames, Alvium G5: see the camera's user guide).

USB camera (Windows only): If your USB camera is connected during the Vimba X installation, the driver is installed automatically. You can always use Vimba X Driver Installer. For Linux, no special driver is required.

You can find the technical documentation for you Allied Vision camera at:
https://www.alliedvision.com/en/support/technical-documentation.html

Limitations:

- Micro-Manager displays all camera features without categorization and most features are only accessible via Property Browser. For an easy camera setup, you can use Vimba X Viewer. You can also save and load camera settings with Vimba X Viewer.

- Binning is supported only via the Device Property Browser, because the Binning button in the GUI doesn't support different binning settings such as horizontal or vertical. In the Device Property Browser, Binning is always listed, even if the camera doesn't support it.

- Micro-Manager 2.0.2: When the user sets a feature in the property browser, the acquisition is stopped, the feature is set, and then the acquisition is started again. Therefore, command features like AcquisitionStop and SoftwareTrigger seem to have no effect, but the feature access itself works. For details, see GitHub issues 1409 and 1447.

Troubleshooting:

- Error -3: If your Configuration file contains multiple cameras, an error occurs if not all cameras are connected. On Windows, make sure the USB camera driver is installed (use Vimba X Driver Installer).

- Error -6: The feature you have tried to use is read-only. Many features are writeable only when image acquisition is stopped.

- Error -7: Check if the camera is already open in another application.

- Error -22: After Micro-Manager crashed, restart Micro-Manager and load the Hardware Configuration again.

- Error -33: Quit Micro-Manager, plug out the camera, plug in the camera again, and start Micro-Manager.

- White or black image or image with lots of artifacts: In the Inspect window, click Auto Once and enable Autostretch: