



# pc<sub>o</sub>.µManager

## Installation Guide

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In this manual you find installation instructions for the micro-manager ( $\mu$ Manager) driver for PCO cameras on Microsoft Windows platforms.

**Target Audience:** This camera is designed for use by technicians, engineers, and scientists.

**In case of any questions or comments, please contact us at PCO.**



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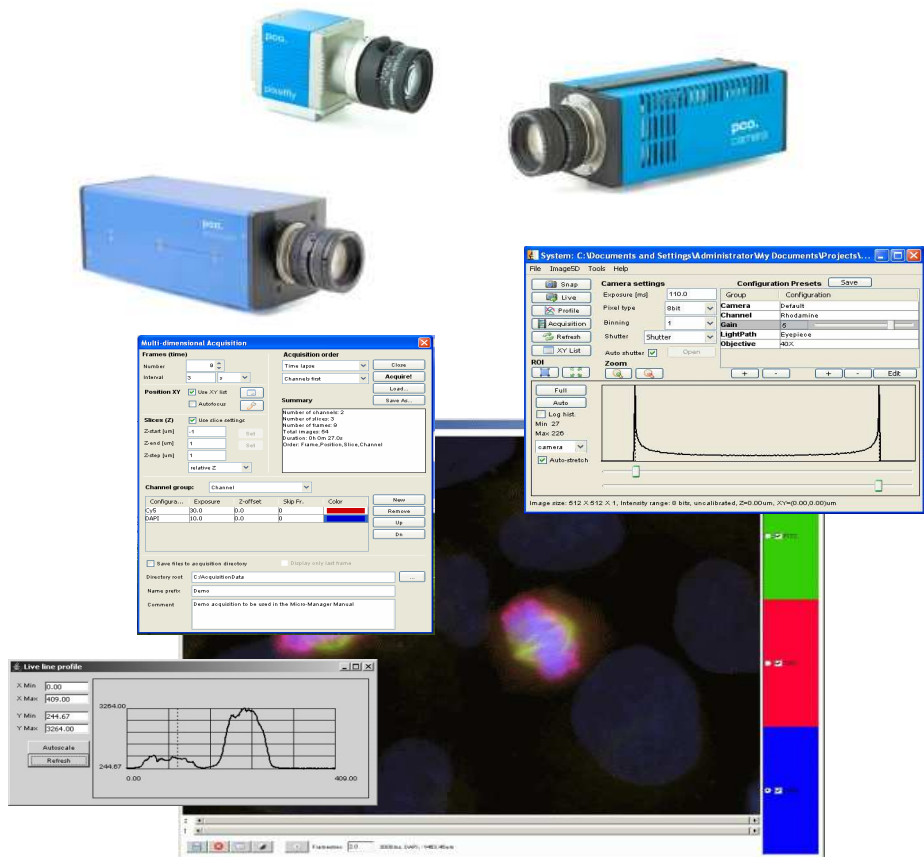
Updated April 2009 © PCO AG

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# 1 Introduction

Put together PCO's complete range of high performance scientific cameras into your specific microscopy setup with Micro-Manager!



## The $\mu$ Manager Project

The Open Source Microscopy Project " $\mu$ Manager" at the Vale laboratory at UCSF is currently funded by the Sandler Foundation. Its main objective is to provide a universal, flexible and low-cost software platform for automated microscopy. In order to provide lasting value and real benefit to a wide community of researchers, the approach of building a self-contained software product has been taken, with quality and ease-of-use standards equal to commercial software. At the same time  $\mu$ Manager project leverages other Open Source tools and components to the maximum extent possible.

## Free of Charge

In contrast to virtually all of the available commercial solutions, Micro-Manager supports multiple platforms (Windows, Mac and Linux) and provides an **open plugin interface for adding new devices**. In addition, Micro-Manager is compatible with the widely used image processing package **ImageJ** available in the public domain. Combined with ImageJ Micro-Manager provides a **full featured microscope management and image processing package**, comparable in capabilities to commercial solutions. It is distributed free of charge and under an Open Source license. Its code base and functionality can be customized, extended and re-used practically without restrictions.

**PCO now provides free adapter for PCO scientific cameras on Microsoft Windows platforms.**

## 2 Installation

### 2.1 Micro-Manager

First install the latest Micro-Manager version (release 1.3.37 and higher) on your computer.

See [www.micro-manager.org/downloads](http://www.micro-manager.org/downloads) for detailed instructions.



### 2.2 PCO Files

Please copy the corresponding dll files into your micro-manager directory.

pixelfly	sencicam	pco.cameras (pco.1300, pco.1600, pco.2000, pco.4000)		
		Firewire	Matrox Cameralink	National Cameralink
Pcocnv.dll	Pcocnv.dll	Pcocnv.dll sc2_cam.dll	Pcocnv.dll sc2_cam.dll sc2_cl_mtx.dll clsermtx.dll mtxclsermil.dll	Pcocnv.dll sc2_cam.dll sc2_cl_nat.dll

These files should be found on your computer under  
C:\Programs\Digital Camera Toolbox\Camware

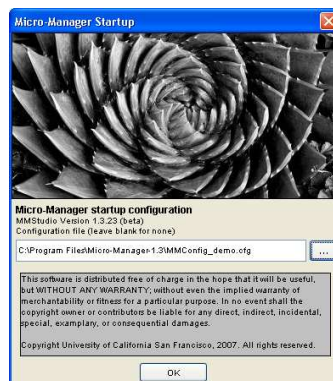
### 2.3 Micro-Manager Configuration

- Start Camera
- Start Micro-Manager



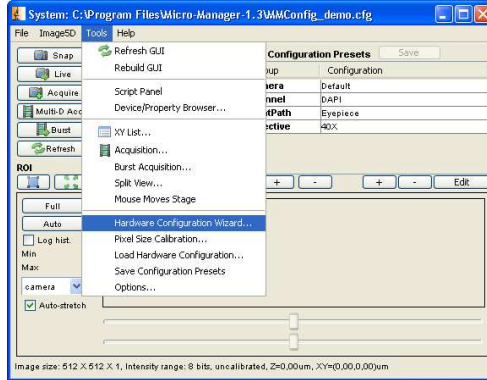
Micro-Manager 1.3.lnk

- Open Micro-Manager with default configuration

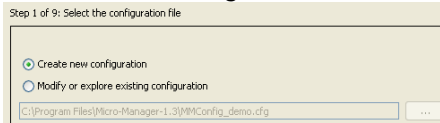


## 2 Installation

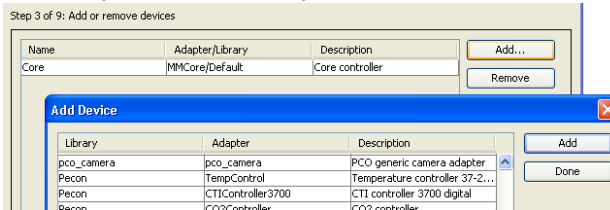
- Start the Hardware Configuration Wizard



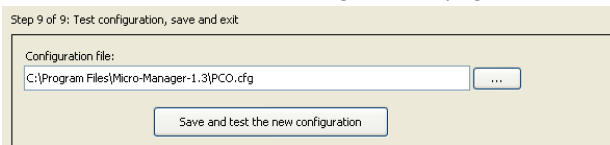
- Create a new configuration

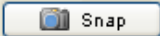


- Add the pco\_camera adapter from list



- Rename and save new configuration (e.g. "PCO camera")



- The connected camera should now be recognized.
-  Snap Image for test.

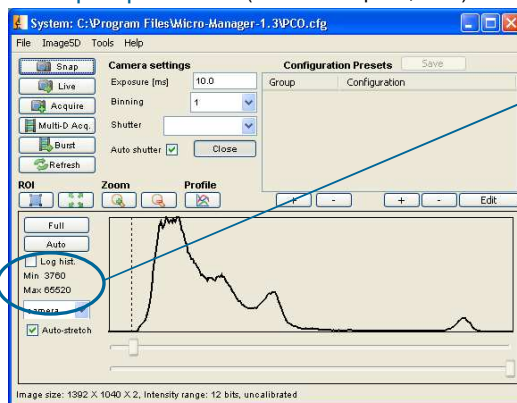
### 2.4 Pixel Values

The 16bit image format of the pco.camera series (e.g. pco.1600) is MSB aligned, thus resulting in a significant shift in the displayed pixel values (see table).

pco.camera		ImageJ / µManager	
bit	pixel values	display	factor
10	0 – 1023	0, 64 - 65472	64
12	0 – 4095	0, 16 - 65520	16
14	0 – 16383	0, 4 - 65532	4

For Pixelfly or Sencicam cameras you will get the correct pixel values.

Example: pco.1300 (1392x1049 pixel,12bit)



Display

Min: 3760  
Max: 65520



Camera Pixel Values

Min:  $3760/16 = 235$   
Max:  $65520/16 = 4095$

# maximize the moment

PCO AG was founded in 1987. The company headquarters in Kelheim employs more than 50 specialists in the development and production of optimized, fast, sensitive camera systems for scientific applications. PCO's range of products includes digital camera systems featuring high dynamics, extremely high sensitivity, high resolution, high speed, and extremely low noise, which are sold in industrial and scientific markets all over the world.

## **Cameras for every point of view.**

The systems produced by PCO AG are cameras and scientific measuring instruments at the same time. Our high-tech systems are mostly the result of manual labor: over 50 highly specialized employees handle development and production at the Kelheim site. We deliver roughly 4.000 cameras a year to customers all over the world. As in every cutting edge technology, dialogue with the user is the main focus of PCO's approach. Worldwide representatives, in cooperation with the in-house marketing division and technical support team, ensure that PCO camera systems are developed in step with the individual requirements of our customers.

**pco.**  
imaging

