installation guide Micro-Manager





PCO asks you to carefully read and follow the instructions in this document. For any questions or comments, please feel free to contact us at any time.

import pco

with pco.Camera



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import pcome, metal with pco.Camera() as cam.record() image, metal

1 Introduction

1.1 Supported Cameras

Include PCO's entire range of high performance scientific cameras into your specific microscopy setup with Micro-Manager.

All monochrome and color versions of the following list are supported:

Camera	Sensor	Interface	Bit	Alignment
pco.1200	CMOS	FW/CL/GigE/USB 2.0	10	MSB*
pco.1300	CCD	FW	12	"
pco.1400	"	FW	14	"
pco.1600	"	33	14	"
pco.2000	"	33	14	"
pco.4000	"	33	14	"
pco.pixelfly usb	"	USB 2.0	14	"
pco.ultraviolet	"	USB 2.0	14	"
pco.dimax	CMOS	GigE/USB 2.0/USB 3.0	12	"
pco.flim	"	USB 3.0	14	"
pco.edge	sCMOS	CL/CLHS/USB 3.0	16	"
pco.panda	"	USB 3.1 Gen 1	16	"

Explanation *Interface:* FW = Firewire IEEE1394A; CL = Camera Link, CLHS = Camera Link HS *Alignment:* *most significant bit

1.2 About Micro-Manager

In contrast to virtually all of the available commercial solutions, Micro-Manager supports multiple platforms 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 provides a free generic adapter for PCO scientific cameras on Microsoft Windows platforms.

2 Micro-Manager



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import pcoage, me with pco.Camera()

2.1 Download



First, *download Micro-Manager*. PCO recommends to *download Nightly Builds* to get the latest version.

Note Nightly Builds is a beta version and is not for productive use: use at your own risk! You always need to install pco.camware, pco.sdk, or the pco.runtime package, because some runtime DLL files from the installed packages are needed (see **2.3**).

Please *do not use the latest release* as it does not contain current bug fixes or the most recent PCO device adapter DLLs.

2.2 Installation

Please follow the installation wizard:

Setup - Micro-Manager-1.	4 —	× Setup - Micro-Manager-1.	4 – 🗆 🗙
	Welcome to the Micro-Manager-1.4 Setup Wizar	Select Destination Locat Where should Micro-Mana	ion ager-1.4 be installed?
	This will install Micro-Manager-1.4 on your computer. It is recommended that you dose all other applications bef continuing. Click Next to continue, or Cancel to exit Setup.	ore To continue, dick Next. II Calerogram Files Microsk	Micro-Manager-1.4 into the following folder. f you would like to select a different folder, click Browse. Ionager-1.4 Browse
	Next > Can	At least 252,1 MB of free	disk space is required. < Back Next > Cancel
3 Setup - Micro-Manager-1. Installing Please wait while Setup in Extracting files C: \Program Files \Vicro-Ma	4 — D	× Setup - Micro-Manager-1	4 — □ × Completing the Micro-Manager-1.4 Setup Wizard Setup has finished installing Micro-Manager-1.4 on your computer. The application may be launched by selecting the installed icons. Click Finish to exit Setup. ✓ Launch Micro-Manager-1.4
	Canc	el	Finish

import pco ge, me with pco.Camera()

2.3 Copy PCO Files

Please *copy* the corresponding *DLL files* into your Micro-Manager directory.

These files should be found on your computer under:

Looking for 64 bit DLLs:

- C:\Program files \PCO Digital Camera Toolbox\pco.camware
- C:\Program files(x86)\PCO Digital Camera Toolbox\ pco.sdk\bin64 pco.runtime\bin64

Looking for 32 bit DLLs:

 C:\Program files(x86)\PCO Digital Camera Toolbox\ pco.sdk\bin pco.runtime\bin

Files needed for all PCO cameras:

- PCO_Conv.dll
- PCO_CDlg.dll
- SC2_Cam.dll

In the case of Camera Link HS interface you also need the following file:

• sc2_clhs.dll

In case of *Camera Link* you also need the following files depending on the used framegrabber:

- Silicon Software ME4: sc2_cl_me4.dll
- Matrox: sc2_cl_mtx.dll, clsermtx.dll, mtxclsermil.dll
- National Instruments: sc2_cl_nat.dll

3 Configuration



- Start your PCO camera
- Start Micro-Manager
- Open Micro-Manager with the default configuration (none)

3.1 Hardware Configuration Wizard



import pco

with pco.Cam

1)				
	4	Micro	o-Manager 1.4.23 20170723 -		
	File	Tool	s Plugins Help		2
		3	Refresh GUI	Configuration se	Hardware Configuration Wizard
			Rebuild GUI	Group	Step 1 of 6: Select the configuration file
			Script Panel Shortcuts Device Property Browser		Create new configuration
	ROI Imag		Stage Position List Multi-Dimensional Acquisition Mouse Moves Stage (Use Hand Tool)	Group: +	Browse
	Co		Pixel Size Calibration Hardware Configuration Wizard Load Hardware Configuration	Sync channels	

import pcoale, metal with pco.Camera() as





Configuration file:		Finished
C:\Program Files\Micro-Manager-1.4\pcoultraviolet.cfg	Browse	Timbied.
		You have successfully completed the Configuration Wizard and the hardware
		configuration for your system has been
Send configuration to Micro-manager.org		built.
Providing the configuration data will assist securing further project funding.		

3.2 Configuration Settings

After the Hardware Configuration Wizard is finished successfully, the Configuration settings can be predefined.

import pco

First add a Group 1.

🗐 Snap	Camera setting:	\$	Configuration setting	gs	Save
👰 Live	Exposure [ms]	10	Group	Preset	
Album	Binning	1 ~			
Multi-D Acq.	Shutter	~			
🤣 Refresh	Auto shutter 🗹	Close			
Please <u>cite Micro-M</u>	l <u>anager</u> so funding v	vill continue!			
ROI Zoo	om Profile /	Autofocus	Group: + -	Edit Preset: +	- Edit

The *Group Editor* opens. Enter a group name 2 and select the property names that you want to add to your group 3. Press *OK* 4.

Here you can specify the properties included in a configuration group.	Show cameras shutters stages wheels, turrets, etc. other devices	4
Property Name	Use in Group?	Current Property Value
pco camera uv-Binning		1
pco_camera_uv-Double Shutter Mode		Off
pco camera uv-Exposure		2
pco camera uv-PixelType		16bit
pco_camera_uv-Timestampmode	- H	Binary + ASCII
pco_camera_uv-TransposeCorrection		0
pco_camera_uv-TransposeMirrorX	- H	0
pco_camera_uv-TransposeMirrorY		D
pco_camera_uv-TransposeXY		0
pco_camera_uv-Triggermode	M	Internal
Core-AutoFocus		
Core-AutoShutter		1
Core-Camera		pco_camera_uv
Core-ChannelGroup		
Core-Focus		
Core-Galvo		
Core-ImageProcessor		
Core-Initialize		1
Core-SLM		
Core-Shutter		



The **Configuration settings** window displays all your configuration settings. Press **Save** to save your **Groups and Presets 8**.

with pco.Camera()

Configuration settings	8 Save
Group	Preset
Fest	Experiment 1
Test 2 K	Experiment 2

.4.23 20170723 - C:\Program Files\Micro-Manager-1.4\uv.cfg — 🗆 🗙				
Help				
amera settings	Configuration settings	Save		
Save the con	figuration file	×		
Save in:	Micro-Manager-1.4	 Ø 📂 🔜 		
Recent Items	Baumer Optronic CoreLogs jre macros mmautofocus			
Desktop	mmplugins okolib OlympusIX3Control plugins			
Documents				
This PC	pcocamera.cfg pcodimax.cfg uv.cfg			
Network	File name: Uv.cfg Files of type: Micro-Manager Config File	Save V Cancel		

3.3 Color Camera

Open the *Device Property Browser* to change the camera settings.

4	Micro	-Manager 1.4.23 20170723 - C:\Program I
File	Tools	Plugins Help
	3	Refresh GUI Rebuild GUI
		Script Panel Shortcuts
		Device Property Browser
Plea		

If you use a PCO color camera, change the *pco_camera-PixelType* to *RGB 32bit*. The *standard value is 16bit* – this will provide a monochrome image.

· · · · · · · · · · · · · · · · · · ·	
pco_dimax-PixelType	RGB 32bit
pco_dimax-Signal 1 (Acquire Enable) Filter	16bit
pco_dimax-Signal 1 (Acquire Enable) Polarity	8bit
pco_dimax-Signal 1 (Acquire Enable) Status	RGB 32bit
pco_dimax_Signal_1 (Acquire Enable) Type	

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contact

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