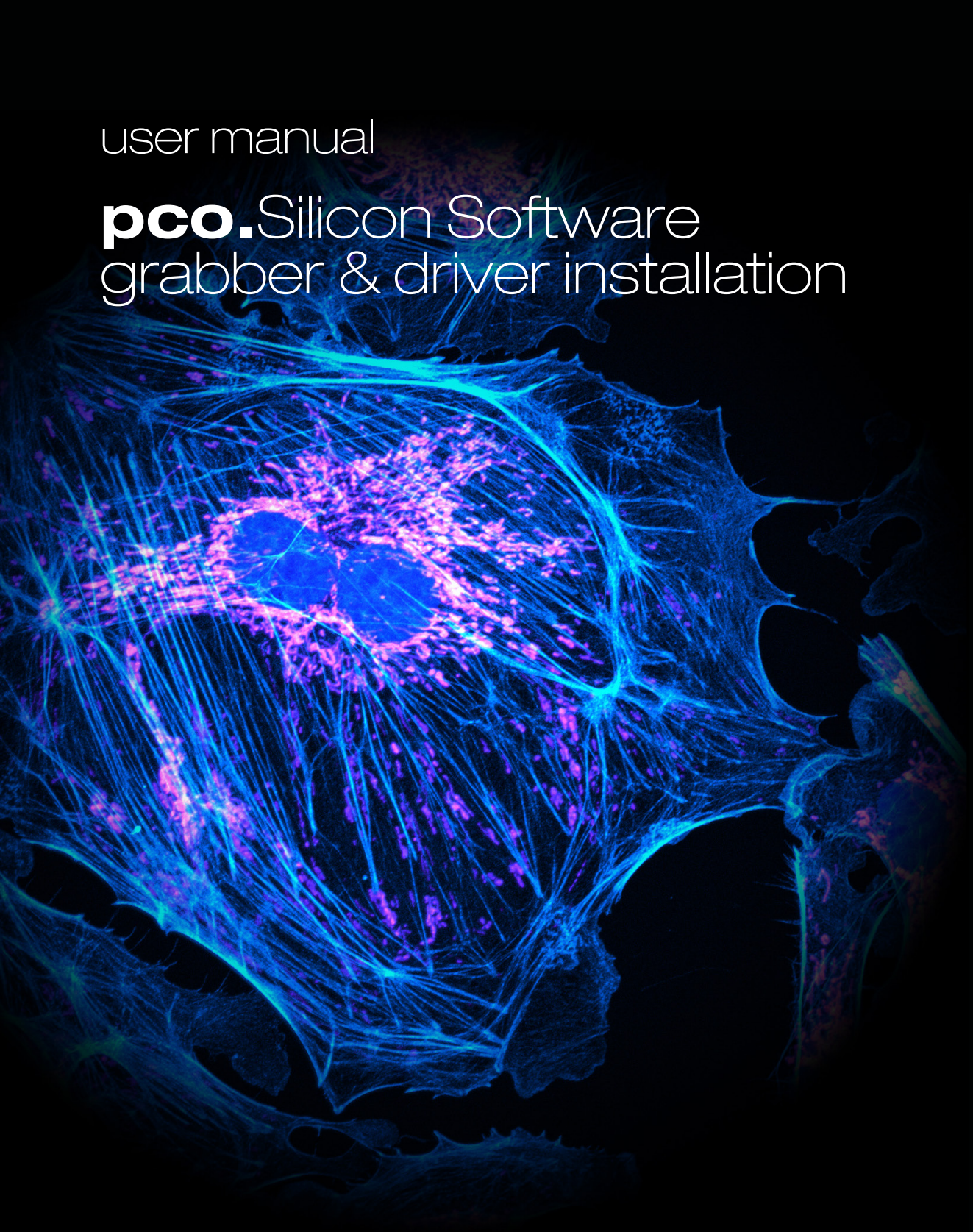
user manual

pco.Silicon Software grabber & driver installation



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Excelitas PCO GmbH 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.

address:	Excelitas PCO GmbH Donaupark 11 93309 Kelheim, Germany
phone:	(+49) 9441-2005-0 (+1) 866-662-6653 (+86) 0512-6763-4643
mail:	pco@excelitas.com
web:	www.excelitas.com/pco

pco.Silicon Software
grabber & driver installation user manual 5.7.8

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Contents

1 Introduction

Instructions for installing and testing the ***Silicon Software microEnable IV (mEIV)*** Camera Link grabber card and the ***Silicon Software micro Enable V (mEV)*** CLHS FOL grabber card for Microsoft Windows and Linux (Ubuntu 20.04) operating systems.

These cards are required to be able to use pco.edge cameras with Camera Link interface or CLHS FOL interface.

Frame grabber installation must be performed by a technican because high voltages can occur on single parts of your computer.

By default, 64bit and 32bit Runtime is installed on 64bit systems. Optionally you may choose to install only 64bit Runtime.

Silicon Software mEIV AD4/VD4 grabber card (for Linux only VD4 grabber card)

Note: Deactivate power saving settings of your computer.
The variables for ambient temperature must be observed and sufficient air flow to the grabber card must be ensured in the computer, see SiSo documentation.

1.1 Installation order

Steps	Description
1 **Runtime**	**Install SiliconSoftware Grabber Runtime** See chapter **2**
2 **Grabber card**	**Install grabber card to your computer** See chapter **4**
3 **microDiagnostics**	**Run microDiagnostics tool** See chapter **5**
4 **Firmware upgrade**	**Update the firmware of your grabber card** Follow the instructions for your frame grabber
a **Firmware upgrade**	**mEIV grabber** See chapter **5.1**
b **Firmware upgrade**	**mEV grabber** See chapter **5.2**
5 **Performance**	**Apply board & Performance test** See chapter **5.3**
6 **Camera software**	**Start pco.camware**

2 Installing Runtime

2.1 Linux

Install the PCO SiliconSoftware Grabber Runtime debian package using

```
sudo dpkg -i pco.siso-runtime_<version>_amd64.deb
```

or

```
sudo apt-get install ./pco.siso-runtime_<version>_amd64.deb
```

After installation has finished your system needs to be rebooted.

NOTE If you are running on a Debian system and your camera isn't detected after installation, please try the following steps to fix it:

1. ***Edit the file /etc/default/grub:***
   Find the line with `GRUB_CMDLINE_LINUX=""` and change it to `GRUB_CMDLINE_LINUX="iomem=relaxed"`. [1]
2. ***Update grub by calling `sudo update-grub`***
3. ***Reboot your system***

2.2 Windows

Start PCO SiliconSoftware Grabber Runtime Installation Package
`PCO_DI_SILICONSOFTWARERUNTIME_<version>.exe`
and follow the instructions.

The installer package includes the installation of the Silicon Software Runtime and all necessary applet packages and files, which are necessary to work with pco.cameras.

Follow these steps:

[1] If the line already has content in, append it with a whitespace `GRUB_CMDLINE_LINUX="<somecontent>␣iomem=relaxed"`

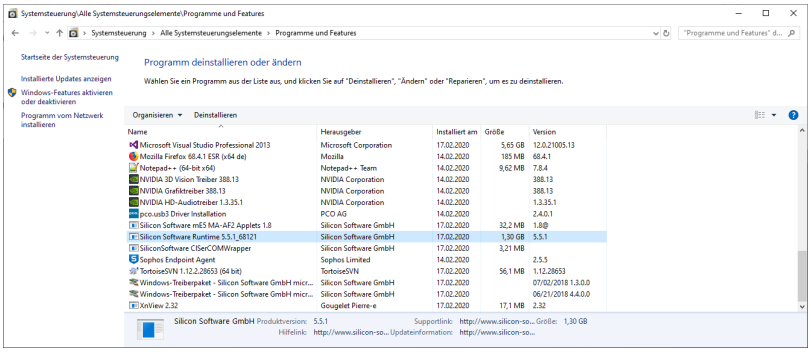

Figure 2.1: uninstall former versions.

1 ***Uninstall former versions*** of Silicon Software Runtime.

For example, use link from ”Programs and Features” in ”Control Panel”.

Figure 2.2: start.

2 ***Start installation.***

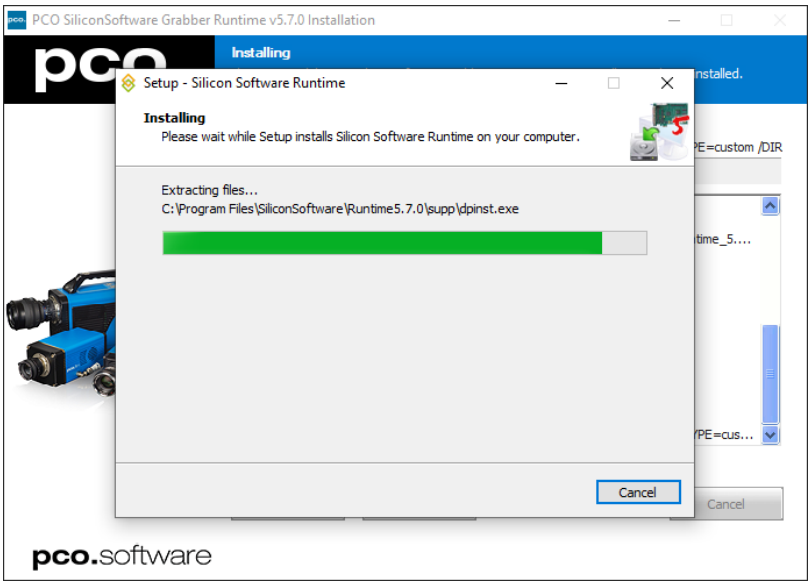

Figure 2.3: 64-bit version.

3 ***Setup Silicon Software 64Bit*** is executed automatically.

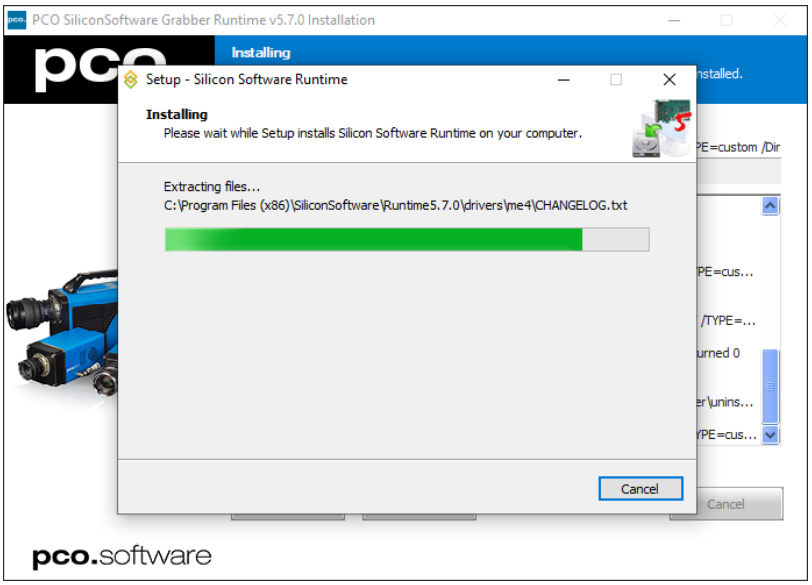

Figure 2.4: 32-bit version.

4 ***Setup Silicon Software 32Bit*** is executed automatically.

Figure 2.5: finished installation.

5 ***Installation is finished.***

6 ***Start microDiagnostics tool*** (see chapter **5**).

3 Uninstalling Runtime

3.1 Linux

Uninstall the PCO SiliconSoftware Grabber Runtime using

```
sudo dpkg --purge pco.siso-runtime
```

or

```
sudo apt-get purge pco.siso-runtime
```

After uninstallation has finished your system needs to be rebooted.

3.2 Windows

Either use link from ”Programs and Features” in ”Control Panel” or start Installation Package again and use remove option of maintenance page.

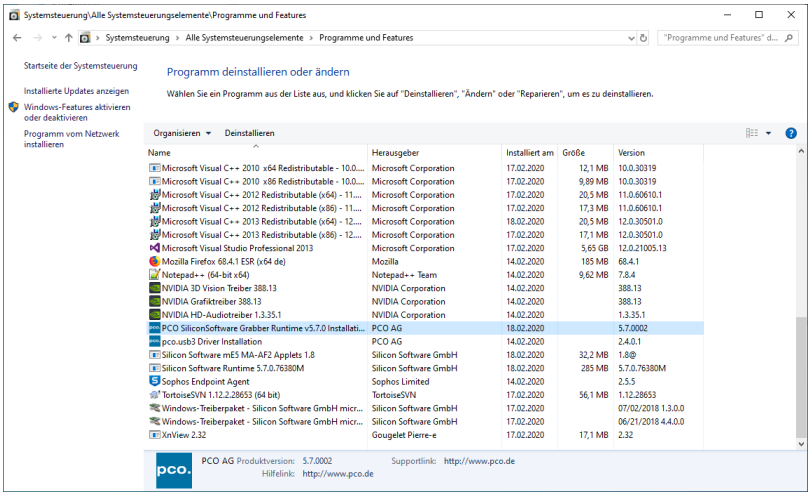

Figure 3.1: uninstall Runtime.

Uninstall from Control Panel.

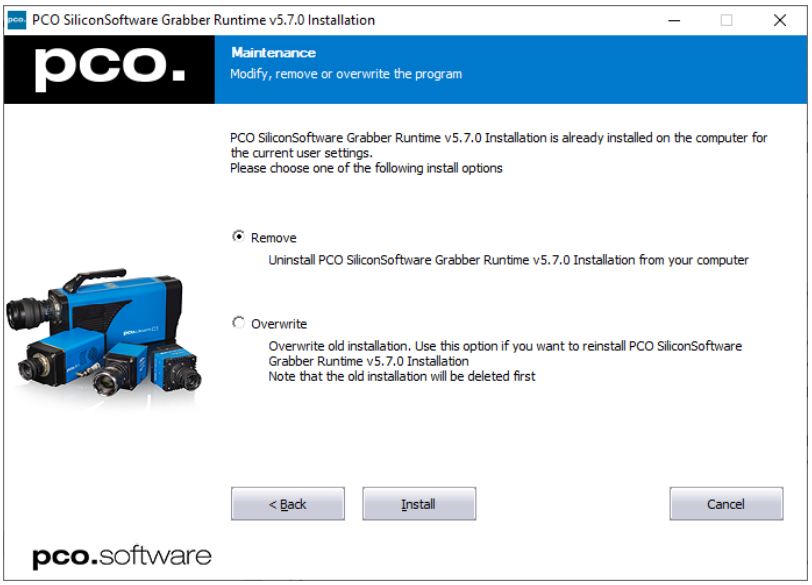

Figure 3.2: remove package.

Uninstall with Installation Package.

4 Install grabber card to PC

The Silicon Software frame grabber card must be installed to your computer.

Electric shock warning due to voltage parts inside.
Risk of injury due to electric shock.
Always pull mains plug before opening the computer.

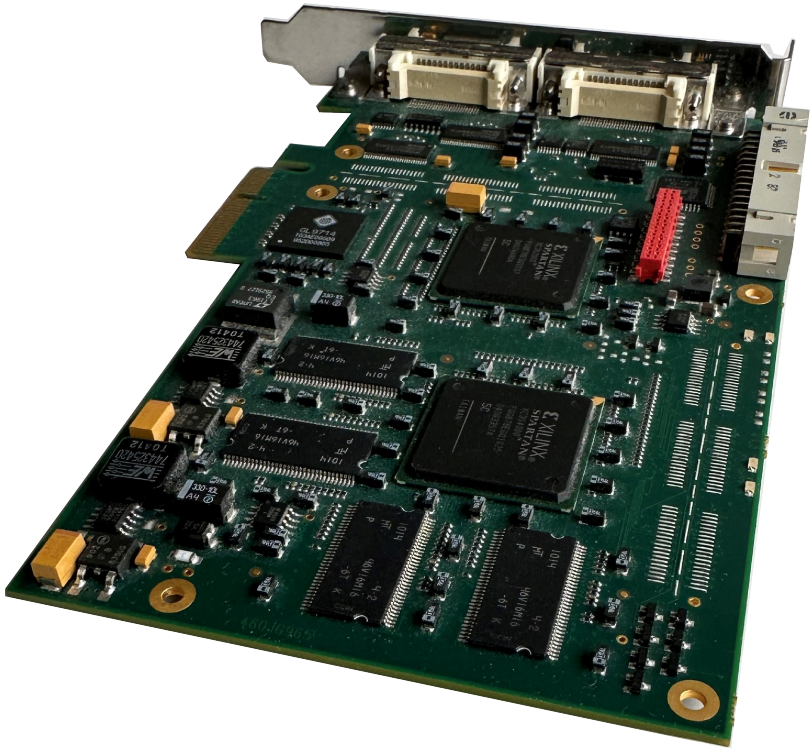

Figure 4.1: mEIV.

Installation of ***new components*** to a computer should only be performed by a ***technician*** or ***qualified personal***.

Installing mEIV: PCI Express x4 (Gen1), DMA900

1. ***Shut down*** your computer.
2. ***Unplug*** it from mains.
3. ***Open*** the computer case.
4. ***Install*** the frame grabber card to a propper slot.
5. ***Start*** your computer.

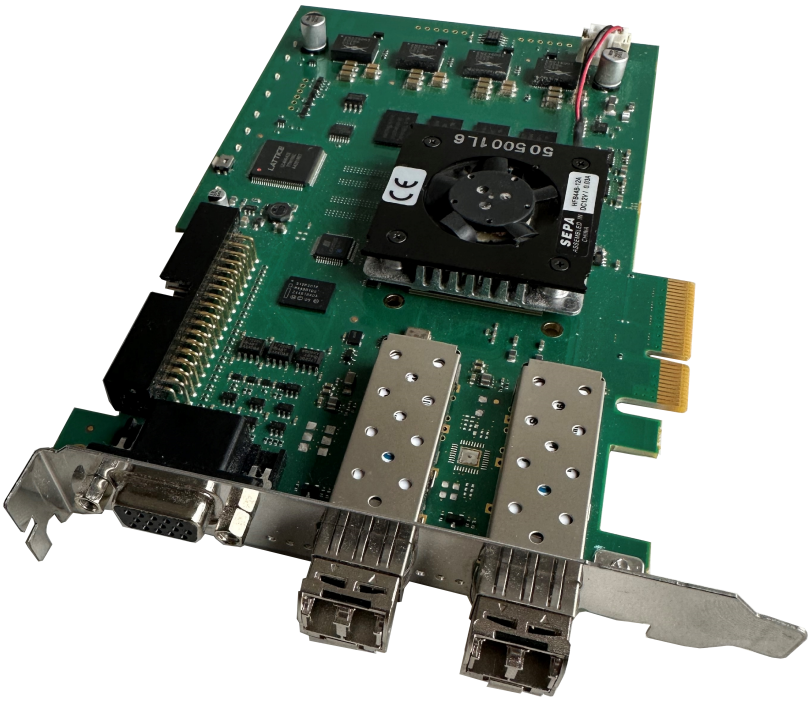

Figure 4.2: mEV.

Installation of ***new components*** to a computer should only be performed by a ***technician*** or ***qualified personal***.

Installing mEV: PCI Express x4 (Gen2), DMA1800

1. ***Shut down*** your computer.
2. ***Unplug*** it from mains.
3. ***Open*** the computer case.
4. ***Install*** the frame grabber card to a propper slot.
5. ***Start*** your computer.

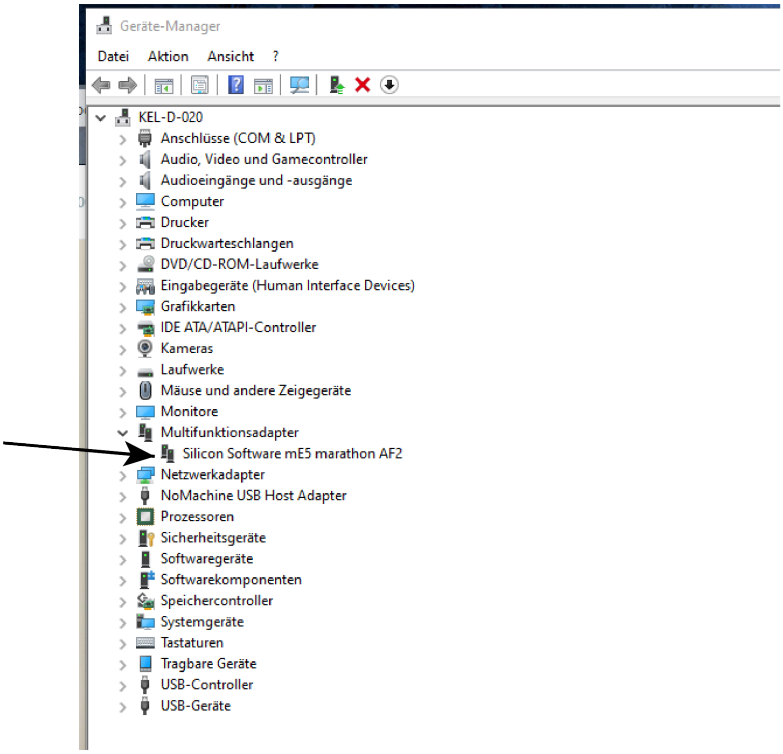

Figure 4.3: device manager 1. (Windows only)

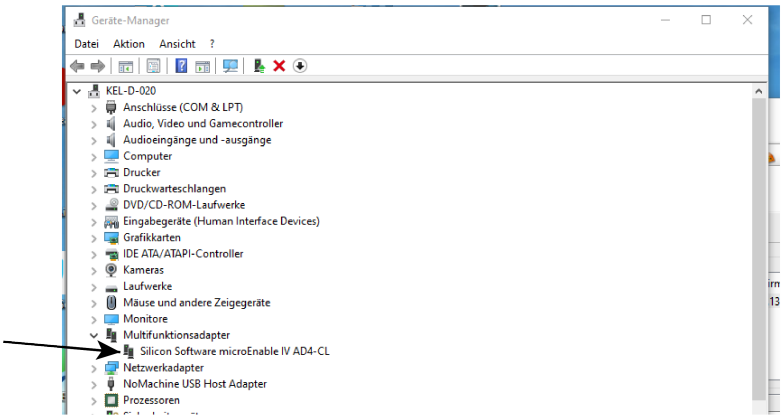

Figure 4.4: device manager 2. (Windows only)

Device manager (Windows only):

The grabber card should be displayed within the device manager. If the device is not shown this way, please reinstall the ***Silicon Software device driver***.

Windows short-cut for device manager: press windows + pause/break key.

5 microDiagnostics tool

The ***microDiagnostics*** tool works with mEIV (AD4 / VD4) and mEV frame grabber cards.

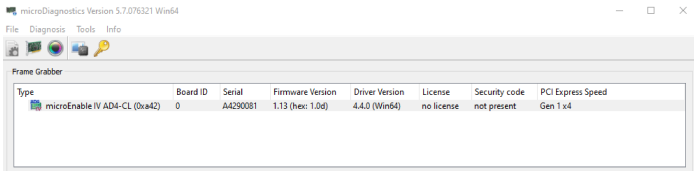

Figure 5.1: microDiagnostics.

Run various diagnostic routines directly on the frame grabber, including ***Applets*** test, ***Board*** test, ***Performance*** test.

Linux On Linux the ***microDiagnostics*** tool can be started simply by calling
`microDiagnostics`
in the terminal.

5.1 mEIV grabber firmware upgrade

Upgrading is only necessary if the latest firmware is not installed on your frame grabber!

Upgrade to the latest firmware on your Silicon Software ***mEIV*** frame grabber by following the instructions.

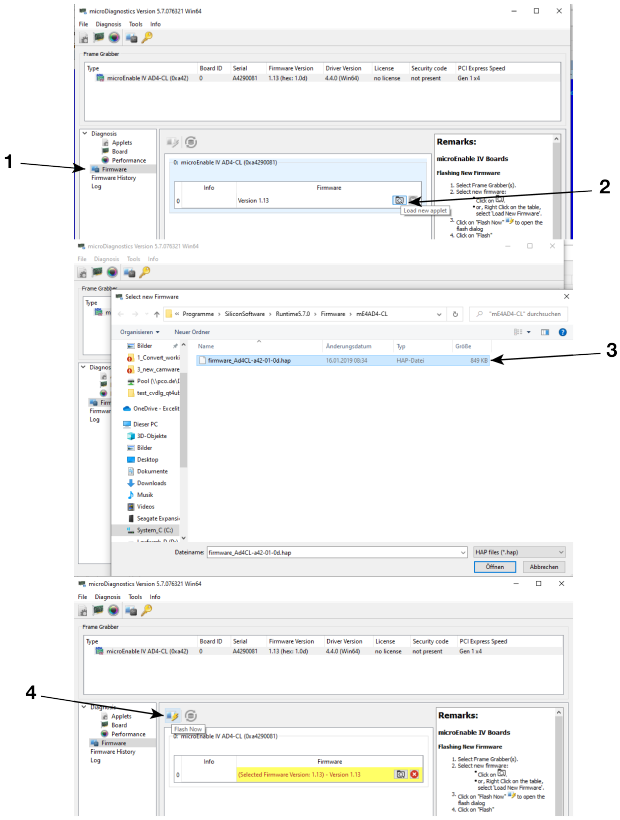

Figure 5.2: microDiagnostics tool.

- Click ***Firmware***. (1)
- Click ***Load new applet***. (2)
- Select the appropriate hap file. (3)
- Click ***Flash Now***. (4)

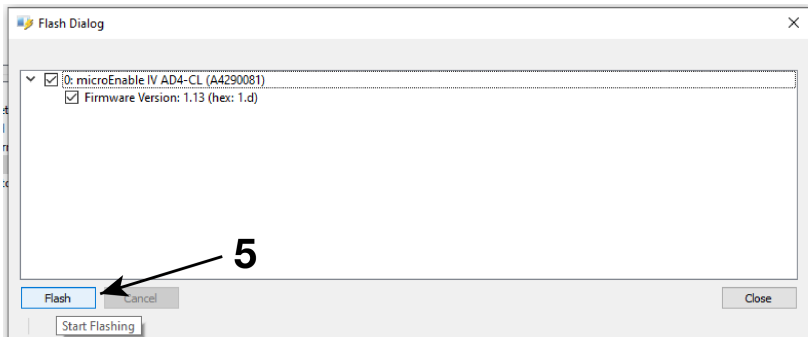

Figure 5.3: Flash Dialog 1.

Flash Dialog opens.

- Click ***Flash***. (5)

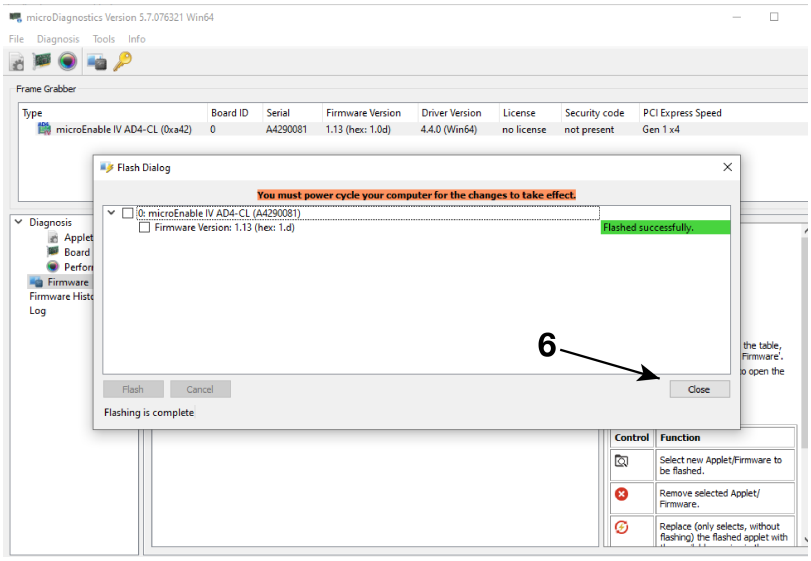

Figure 5.4: Flash Dialog 2.

Now it is successfully flashed.

- ***Close*** this dialog. (6)

You must ***shut down*** (a restart is insufficient) your computer ***completely*** after the firmware upgrade for the changes to take effect.

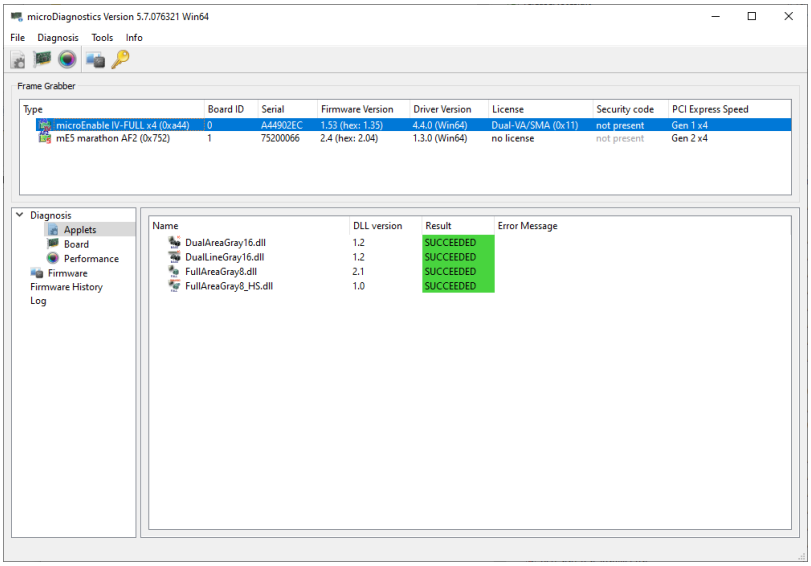

Figure 5.5: select diagnosis.

Last step:
Select Diagnosis -> Applets

Result must be: ***succeeded***.

5.2 mEV grabber firmware upgrade

Upgrading is only necessary if the latest firmware is not installed on your frame grabber!

Preparations

All steps described in the following chapter for the mEV marathon AF2 grabber also apply for the mEV VF2 grabber.

The latest firmware applet for the grabber card is already copied during installation. Check firmware version on the grabber card using the microDiagnostics software described below.
PCO cameras only use firmware applet Acq_DualCLHSx1AreaRAW.

Firmware upgrade

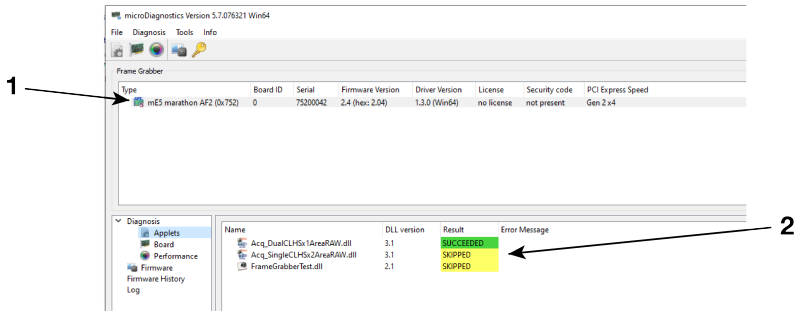

Figure 5.6: mEV grabber 1.

First, test if the proper firmware is installed.

Select Diagnosis -> Applets (1)

If test result for Acq_DualCLHSx1AreaRAW.dll (Windows) or libAcq_DualCLHSx1AreaRAW.so (Linux) is ***skipped*** an update is required. (2)

Select Diagnosis -> Firmware.

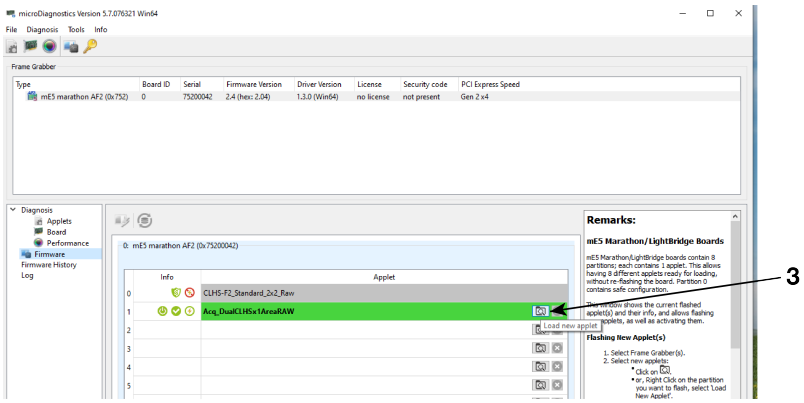

Figure 5.7: mEV grabber 2.

The current ***Applet*** must be updated.

Click ***Load new applet*** (3) and select the new Acq_DualCLHSx1AreaRAW.dll.

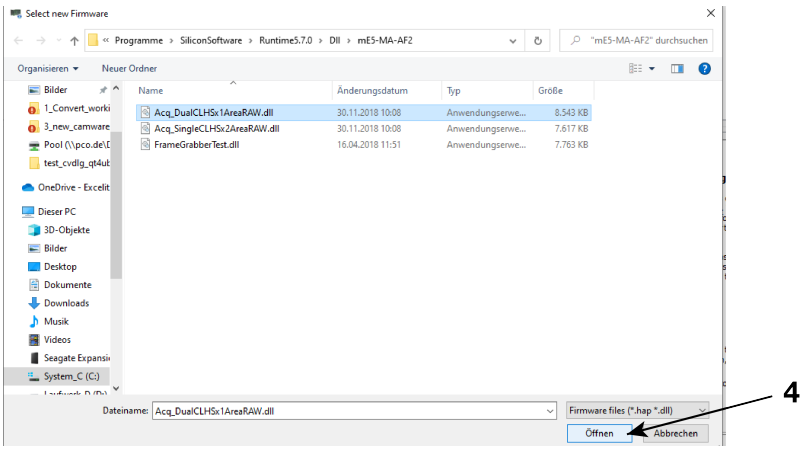

Figure 5.8: mEV grabber 3.

Click ***Open***. (4)

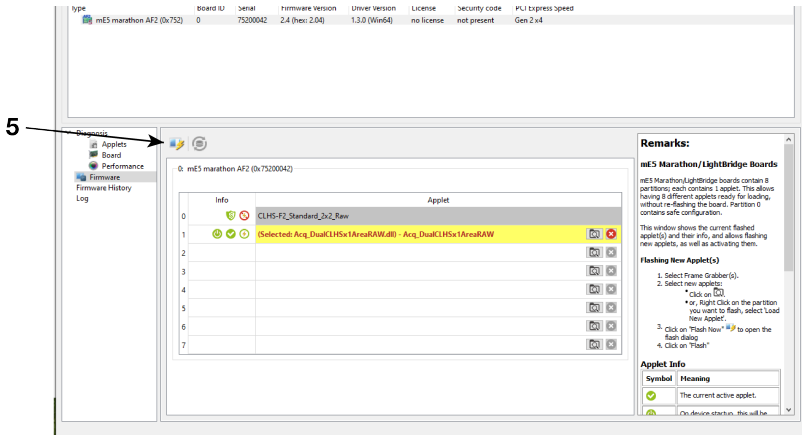

Figure 5.9: mEV grabber 4.

Click ***Flash Now***.(5)

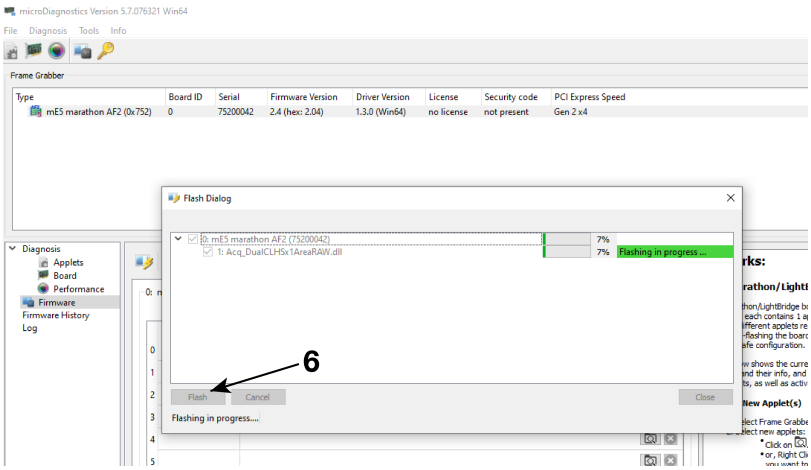

Figure 5.10: mEV grabber 5.

Flash Dialog opens.

Click ***Flash***. (6)

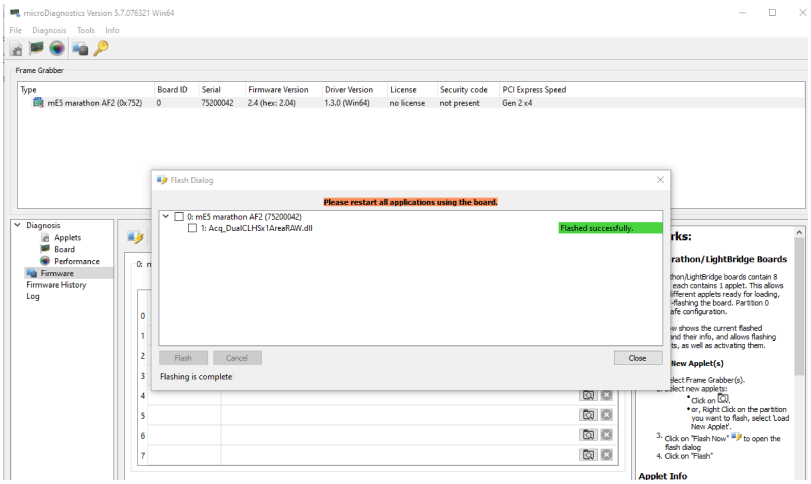

Figure 5.11: mEV grabber 6.

Now it is flashed successfully.

Close this dialog.

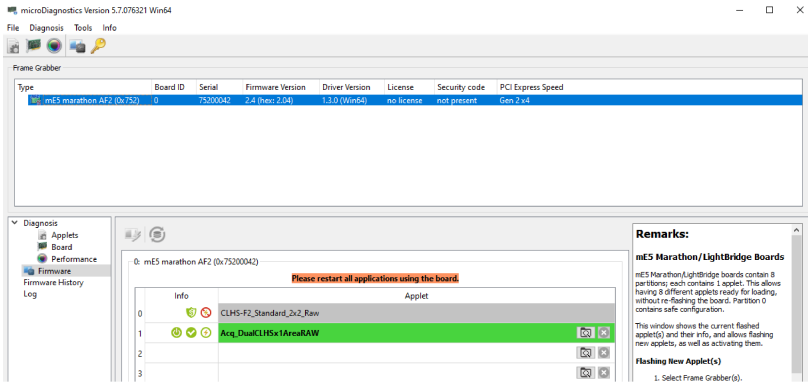

Figure 5.12: mEV grabber 7.

Restart all applications using the board.

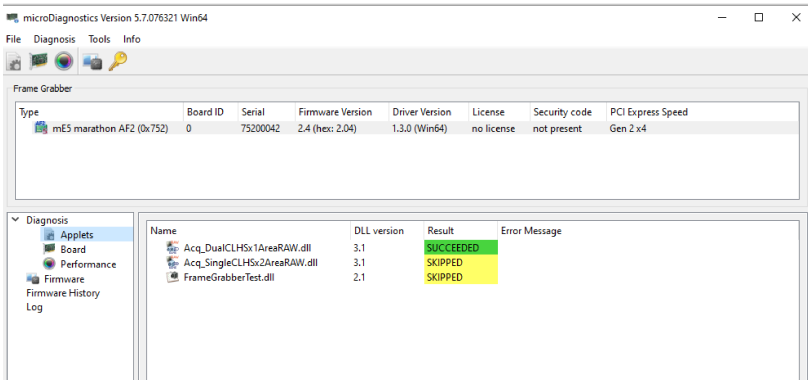

Figure 5.13: mEV grabber 8.

Select Diagnosis -> Applets.

Now the ***Result*** is ***succeeded***.

5.3 Performance test

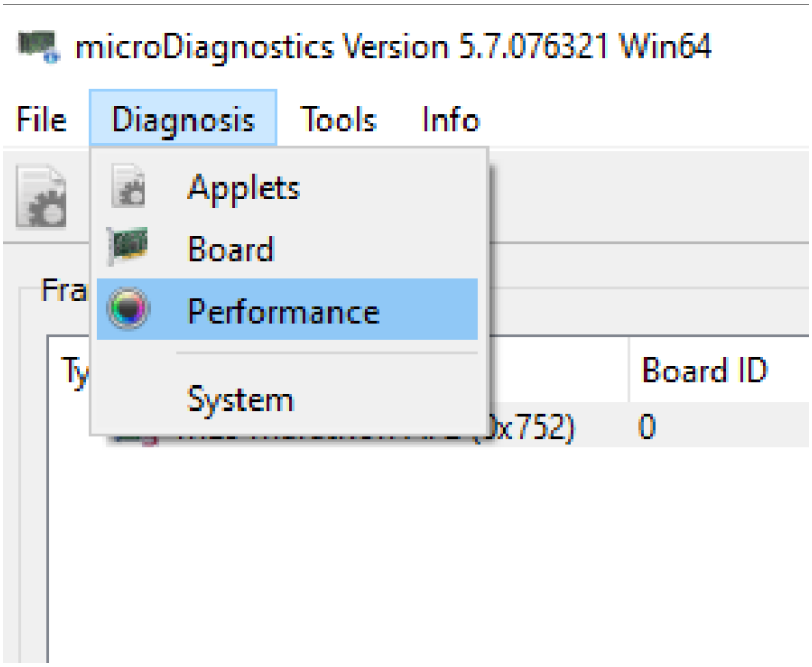

Figure 5.14: test 1.

To test the board, open the ***Diagnosis*** menu and click ***Board*** to start the test.

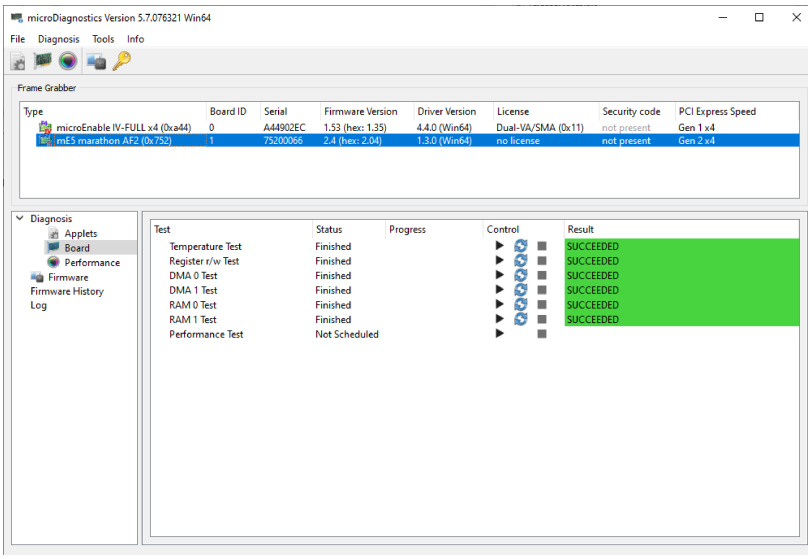

Figure 5.15: test 2.

All test results should show ***succeeded***.

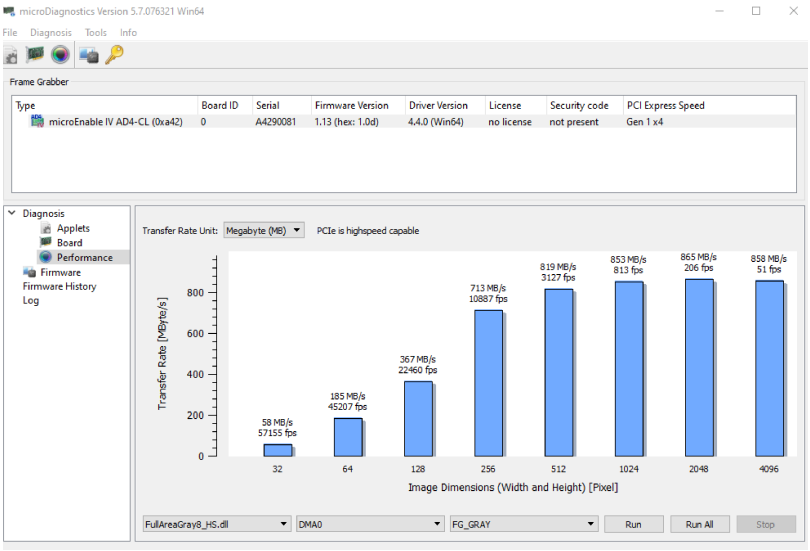

Figure 5.16: test 3.

Test the performance: Click ***Performance*** to start the test.

It is mandatory that the **PCIe board** is **high-speed capable**. Otherwise the board will probably not be able to support the necessary data rate.

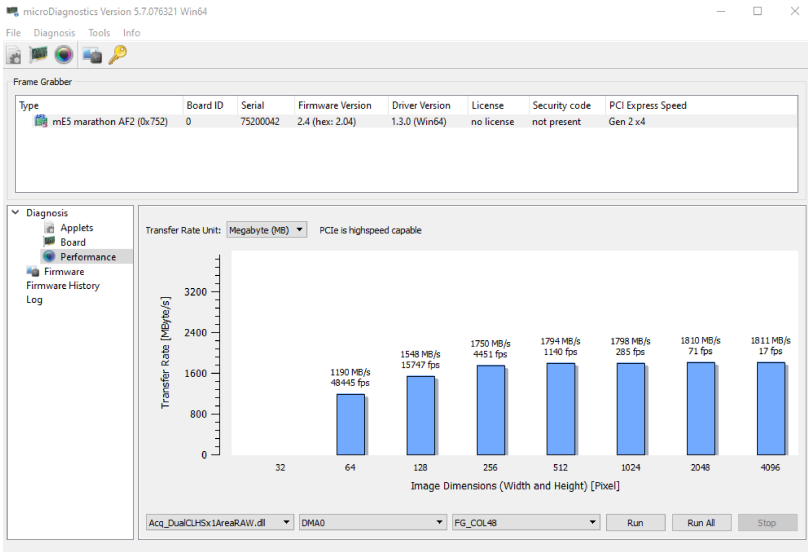

Figure 5.17: test 4.

These two screenshots show achievable data rates for mEIV (3) and mEV (4) boards.

For further information or problems with mainboards please contact our ***support***.

6 About Excelitas PCO

Pioneering in Cameras and Optoelectronics (PCO) has been our shared philosophy since our establishment in 1987. Starting with image-intensified cameras, followed by the co-invention of the groundbreaking sCMOS sensor technology, PCO greatly surpassed the imaging performance standards of the day. Acquired by Excelitas in 2021, our PCO camera portfolio continues to forge ahead as a leader in digital imaging innovation across diverse applications such as scientific and industrial research, automotive testing, quality control, and metrology.

With sophisticated mechanical design, extensive software support, and a broad range of accessories, we deliver adaptable solutions for all demands. This adaptability extends to tailor-made firmware and custom image sensors, which allow us to develop highly specialized solutions for all our customers. PCO represents a world-renowned brand of high-performance camera systems that complement Excelitas' expansive range of illumination, optical, and sensor technologies and extend the bounds of our end-to-end photonic solutions capabilities.

Our comprehensive camera portfolio covers the entire spectrum - from deep ultraviolet (DUV) to shortwave infrared (SWIR), from long exposure to high-speed, from line scan to high-resolution area scan. Our camera systems are controlled and processed through an intuitive and powerful software suite addressing an extensive range of platforms and architectures.

List of Figures

pco.®

address:	Excelitas PCO GmbH Donaupark 11 93309 Kelheim, Germany
phone:	(+49) 9441-2005-0 (+1) 866-662-6653 (+86) 0512-6763-4643
mail:	pco@excelitas.com
web:	www.excelitas.com/pco

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