

user manual

pco.edge 4.2 bi XU

at the cutting edge with cooled back-illuminated sCMOS



pco.

An Excelitas Technologies Brand

**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.**



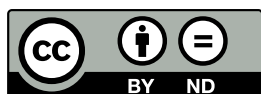
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pco.edge 4.2 bi XU user manual 1.0.0

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1. Safety

This camera system is a scientific measuring equipment and is designed for use by technicians, engineers, and scientists. The camera may only be used according to the instructions of this manual. Provisions, limitations, and operating conditions stated in this manual must be respected. Unauthorized modifications and alterations of the device are forbidden for safety reasons.



DAMAGED POWER CABLE OR POWER PLUG: Danger to life due to electric shock. Each time the camera is used, check the power cable for damage.



ELECTRIC SHOCK WARNING DUE TO VOLTAGE PARTS INSIDE: Risk of injury due to electric shock. Never slide any items through slits or holes into the camera.



MOISTURE: Risk of injury due to electric shock if moisture enters the camera. To avoid the risk of water condensation, protect the camera against extreme changes of ambient temperature.



TRIPPING HAZARD: Risk of injury from tripping over loose cables. Never position the cable in a way that it could become a tripping hazard.



HUMIDITY, DUST OR RADIATION: Humidity, dust or X-rays could damage the camera. Never operate the camera in humid or dusty environments or in places with high levels of X-ray radiation.



SHOCK AND VIBRATION: To avoid damaging the camera, it must be firmly mounted and protected against strong shocks or vibrations. Use the camera's mounting threads to secure it.



LENS MOUNTING: Do not force the lens onto the camera. Screw in the lens gently to avoid thread damage.



LIQUIDS DAMAGE CAMERA: If liquids have penetrated the device: Switch the camera off immediately, detach it from power and contact PCO's customer support.

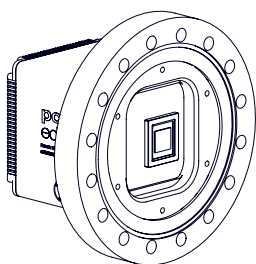
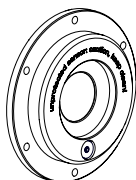
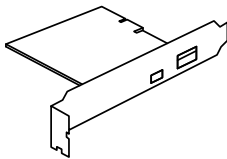


DAMAGED CAMERA HOUSING: If the camera has been dropped or the camera's housing is damaged: Switch the camera off immediately, detach it from power and contact PCO's customer support.

2. System components



The following standard components are included in your scope of delivery:

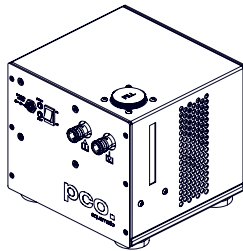
Article	Picture	Details
pco.edge 4.2 bi XU		chapter 3
Protective cover		chapter 5
USB interface card		chapter 2.2
Cables (USB A-C)		chapter 2.3
Power supply		chapter 2.3

These accessories are available for the pco.edge 4.2 bi series:

Article	Picture	Details
SMA cables		chapter 2.3

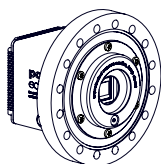
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Article	Picture	Details
pco.aquamatic III		chapter A

All pco.software products can be downloaded for free from the PCO website. For more information see the PCO [homepage](#).

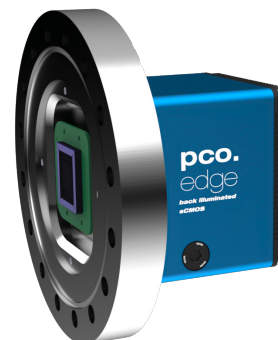
2.1. Camera pco.edge 4.2 bi XU



Thanks for choosing a pco.edge 4.2 bi XU camera. The pco.edge 4.2 bi XU is based on a back illuminated sCMOS sensor with a very specific coating which allows applications in the visible light down to extreme UV (EUV) and soft X-ray radiation. The camera is adapted for ultra-high vacuum operations and has been characterized using soft X-ray in the energy range from 30 eV to 1000 eV.

Main Features

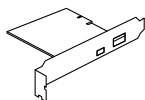
- sCMOS PulSar technology
- Usable with vacuum down to 1×10^{-7} mbar
- High spatial resolution 2048 x 2048 pixel
- Pixel size $6.5 \mu\text{m} \times 6.5 \mu\text{m}$
- Low readout noise 1.9 e^- (median)
- Spectral range 1 nm to 1100 nm (1.2 keV to 1.1 eV)
- Rolling Shutter (RS), Global Reset (GR)
- Dynamic range 88 dB
- Frame rate 40 fps @ 4.2 MPixel
- Up to 95 % quantum efficiency @ 2.28 nm
- USB 3.1 Gen1 data interface



This document contains important information about the camera pco.edge 4.2 bi XU. It is an additional document to the edge 4.2 bi camera manual, which can be downloaded from the PCO website. Please note that the information on operating the edge 4.2 bi camera also applies to the XU variant.

Please read the instructions given in this document carefully. It contains useful information and advice to operate the camera in intended way. If there are any questions regarding the pco.edge 4.2 bi XU camera, please feel free to contact PCO or the local representative.

2.2. USB interface card



An external Delock USB 3.1 Gen 2 host controller card (incl. a CD that contains the necessary driver) comes along with each pco.edge camera. This card can be used to connect the camera to a PC via USB cable if the PC does not have the necessary USB port installed already.

Note: In multi-camera operation, each camera needs its own USB host controller card.

Hardware Installation: First shut down the computer and mount and install the USB 3.1 Gen 2 host controller card.



WARNING: Danger from electrical voltage!

HIGH VOLTAGE: Hardware installation must be performed by a technician, because high voltages can occur on the device. Always pull the main plug before opening the computer. Wear anti-static ESD boots to prevent irreparable damage.

Driver Installation: The driver installation differs, depending on the operating system and controller card:

For Win 10 or higher a manual installation of ASMedia3142 can be done. For Win 7/8 the manufacturer must be asked if an implementation is possible.

OS	Controller card	Driver
Win 10	Delock 90299	Manual Installation of ASMedia3142
Win 11	Delock 90299	Manual Installation of ASMedia3142
Linux	Delock 90299	PCO-connection based on libusb version 1.0.21

ASMedia3142 Installation Follow these steps to install the **ASMedia3142** driver under Win 10/11:

- Insert the Delock driver CD **SE-CD5D-DL-PCIEU** in your CD drive and open the folder **ASMedia**.
- Alternatively, browse for the folder **USB3.0pciboard** on the USB stick that comes with the camera.
- Open the subfolder **ASM3142** and run the **setup.exe**
- If the **User Account Control** is enabled, a dialog may ask you to launch the setup. Accept with **Yes**.
- Follow the instructions of the Installer.

For more information on the installation and operation of the USB interface card, please consult the manufacturer.

2.3. Cables

The pco.edge 4.2 bi XU is delivered with an USB interface cable for data transfer and a power supply cable.

Article	Length	Description	Scope of delivery
Interface cable	3 m	USB 3.1 type A - type C, DELOCK 83668	included
SMA cable	0.3 m	Coaxial cable type SMA-BNC	available on request
Power supply	1.5 m	Input: 115 - 230 VAC; Output: 24 VDC/ 1.5 A	included

Please note that other cables may not be suitable for your camera. If a cable is equipped with a screwable mount, make sure to attach it to the camera accordingly.



NOTE Only use cables which are approved by PCO. Otherwise full functionality cannot be guaranteed.

2.4. MachVis software



The MachVis Software can be used to select a suitable lens for a camera or optical setup. With its help it's possible to find fitting lenses for variable types of cameras. More information can be found on the [web](#).

3. Camera overview

The following chapter provides an overview of the pco.edge 4.2 bi XU.

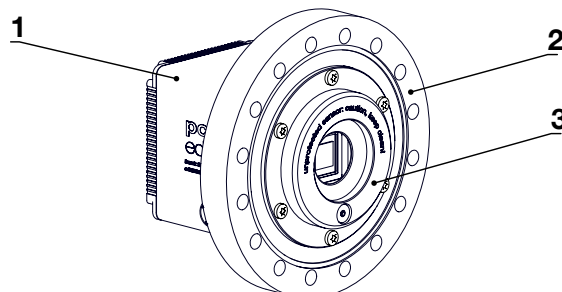


Figure 3.1.: pco.edge 4.2 bi XU overview.

Interfaces	
1	pco.edge 4.2 bi XU camera body
2	Vacuum flange
3	Protective cover

3.1. Camera interfaces

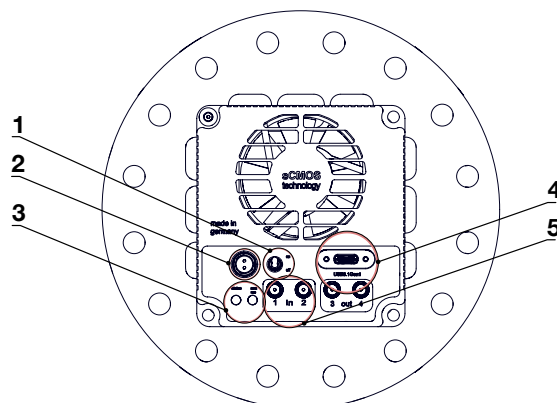


Figure 3.2.: pco.edge 4.2 bi XU rear panel interfaces.

Interfaces	
1	On/Off switch
2	Power interface
3	LEDs (status and arm/rec)
4	USB 3.1 Gen1
5	SMA connectors (trigger and status)

Please refer to the pco.edge 4.2 bi manual for further information on camera interfaces.

3.2. Hardware setup

- If the camera shall be cooled by water, connect the camera to the pco.aquamatic III or any other system for water cooling.
- Power the camera via the included power supply.
- Connect the camera to the PC via the included USB cable.
- Connect the SMA interfaces via coaxial cables for status or trigger functionality to other equipment.

3.3. LEDs

The functionality of the LEDs on the rear panel of the camera is listed in the following table.

LED "arm/rec"		LED "status"		Meaning
OFF		Orange		Camera is booting
OFF		Green		Camera is ready for operation
OFF		Red		Error
Orange		Green		Arm camera / rec state off
Orange blinking		Green		Recording
OFF		OFF		Camera without power

4. Camera mechanics

Following illustrations show the mechanical outlines of the pco.edge 4.2 bi XU.

4.1. Mechanical outlines

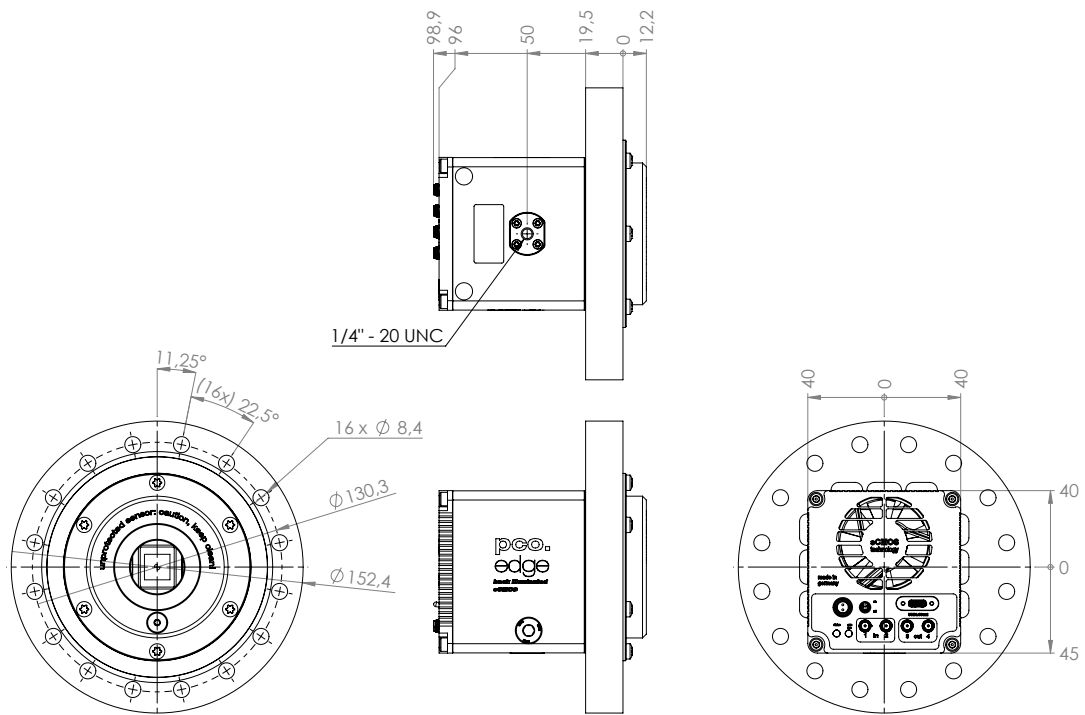


Figure 4.1.: outlines pco.edge 4.2 bi XU (all dimensions given in mm).

The vacuum flange of the camera can be designed with screw holes starting at an angle of 0-° or at an angle of 11.25-°. In this way the flange can be adapted to customer requirements and different vacuum setups. For more questions, visit the manufacturer's website or contact your local representative. Detailed drawings, step files and 3D PDFs are available at www.pco.de or on request.

4.2. Mounting

The pco.edge 4.2 bi XU provides different options for mounting. Please make sure that the camera is mounted in a stable way to avoid vibrations, which might disturb image quality.

Bottom mounting

The camera can be mounted via the thread at the bottom of the housing.

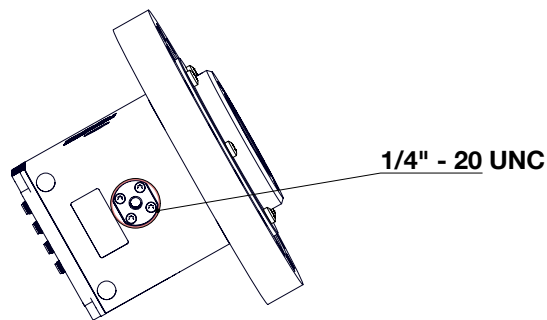


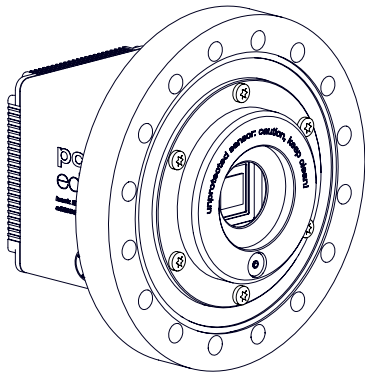
Figure 4.2.: bottom view of the camera (threads marked in red).



CAUTION Do not exceed the maximum recommended torque for the mounting screws.
Maximum recommended torque for M4: 2.2 Nm; 1/4" - 20 UNC: 7 Nm

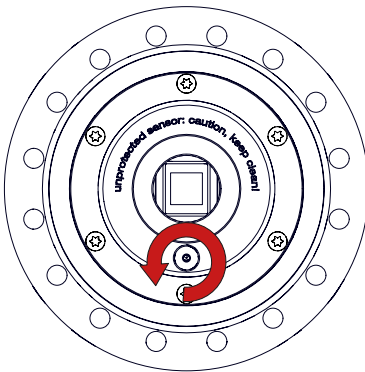
5. Mounting of the vacuum flange

The vacuum flange must be mounted carefully. The adjustment can be done by the user. A step-by-step procedure is given in the following chapter:

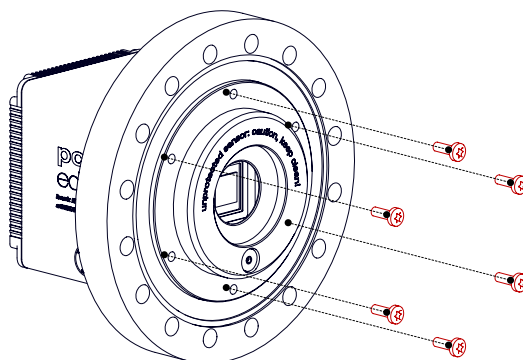


1. Clean the flange with a lint-free cloth. No dust or grease should remain on the component.

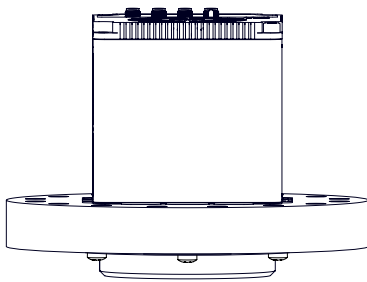
(**Tip:** cleaning works best with ethanol or acetone.)



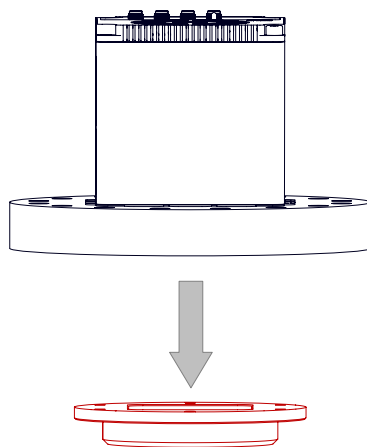
2. Before unscrewing the cover, the vent screw must be loosened briefly or unscrewed completely, so that the vacuum chamber can adapt the ambient pressure. The screw must be loosened counterclockwise.



3. Remove the protective cover, by unscrewing the six identical screws.

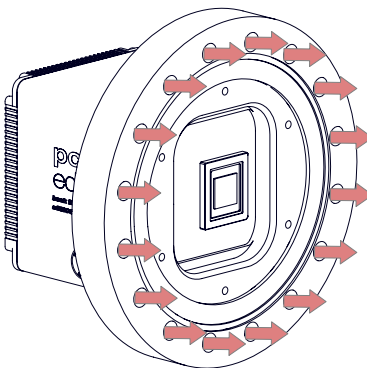


4. While the protective cover is not mounted, the camera and the flange should be held as shown in the illustration on the left. When handling the camera in this way, no dust or other residues should remain on the sensor or the flange.

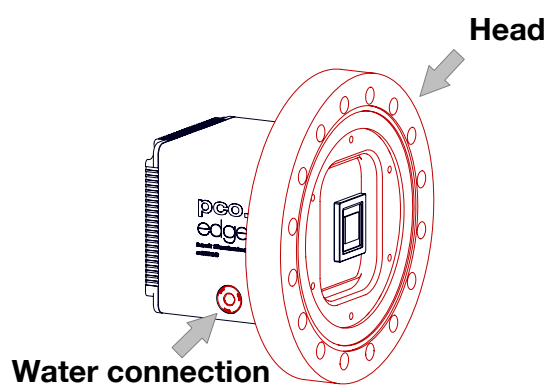


5. Now hold the protective cover, because it's not mounted at the flange anymore. The sensor faces the ground, so no dust can get onto it's surface. At this point, the protective cover can be removed. Put an unused copper seal on the flange. An A-CF-copper seal DN100 should be used.

SAFETY NOTE: Special care must be taken when handling with an unprotected sensor. Do not touch or influence the sensor surface by any other objects or materials.



6. Now the camera flange can be screwed to its counterpart. Mount the flange crosswise to the vacuum setup using M8 stainless steel screws. This should be done with a torque of 20 Nm.



7. When all this is done, the camera and the flange are perfectly mounted and should be ready to use.

(Tip: Heat the head before using it for the first time, for outgasing reasons. It is recommended to use the water-cooling-system. Refer to the pco.edge 4.2 bi manual for more instructions.)

6. Specifications

The following technical details describe the camera and its features:

sCMOS image sensor

Parameter	Value
Sensor type	Scientific CMOS (sCMOS)
	Monochrome
Shutter type	Rolling Shutter, Global Reset
Resolution (h x v)	2048 x 2048 active pixel
Pixel size (h x v)	6.5 μm x 6.5 μm
Sensor format/diagonal	13.3 mm x 13.3 mm / 18.8 mm
MTF	76.9 lp/mm (theoretical)
Fullwell capacity	48.000 e^-
Readout noise (typ.) ¹	1.9 med e^- / 2.5 rms e^-
Dynamic range (typ.)	88 dB
Quantum efficiency	95 %
Spectral range	1 nm to 1100 nm
Dark current (typ.)	0.2 $\text{e}^-/\text{pixel/s}$ @ -25 °C ambient temperature
DSNU	< 0.6 e^- rms
PRNU	< 1.2 %
Anti blooming factor ²	> 10,000
Parasitic light sensitivity	1/10,000

¹ The readout noise values are given as median (med) and root mean square (rms) values, due to the different noise models, which can be used for evaluation. All values are raw data without any filtering.

² Based on image sensor data sheet.

Camera system

Parameter	Value
Maximum frame rate @ full resolution	40 fps
Exposure/shutter time	10 μs - 20 s
Dynamic range A/D	16 bit
A/D conversion factor	0.8 e^-/DN
Pixel data rate	184 MPixel/s
Binning horizontal	x1, x2, x4
Binning vertical	x1, x2, x4
Region of interest (ROI)	Horizontal: steps of 32 pixels, Vertical: steps of 8 pixels
Non linearity	< 0.6 %
Cooling method	Adjustable: from -25 °C to +20 °C
	peltier with forced air (fan)
	and water cooling

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Parameter	Value
	calibration setpoint: -10 °C
Trigger input signals	Frame trigger, acquire (SMA connectors)
Trigger output signals	Exposure, busy (SMA connectors)
Time stamp	In image (1 µs resolution)
Data interface	USB 3.1 Gen 1

General

Parameter	Value
Power delivery	Power over USB 3.1 Gen 1 and power supply
Power consumption	Typ. 4.5 W over USB 3.1 Gen1 and typ 10.0 W (max. 22.0 W) over power connector
Weight	3.1 kg
Operating temperature	+10 °C to +40 °C
Operating humidity range	10 % to 80 % (non-condensing)
Storage temperature range	-10 °C to +60 °C
CE/FCC certified	Yes

Frame rate table

Resolution	pco.edge 4.2 bi XU
2048 x 2048	40 fps
2048 x 1024	80 fps
2048 x 512	159 fps
2048 x 256	302 fps
2048 x 128	527 fps
1920 x 1080	76 fps
1600 x 1200	68 fps
1280 x 1024	80 fps
640 x 480	171 fps
320 x 240	320 fps

Appendix

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A. Aquamatic III

The water cooling system pco.aquamatic III is the cooling option for all PCO cameras. This will be introduced to the user in the following chapter.

A.1. Safety

Hazard warnings

H302 – Harmful if swallowed.

H373 – May cause damage to organs through prolonged or repeated exposure.

Safety instructions

P101 – If medical advice is needed, have product container or label at hand.

P102 – Keep out of reach of children.

P103 – Read label before use.

P260 – Do not breathe dust/fume/gas/mist/vapours/spray.

P264 – Wash thoroughly after handling.

P270 – Do not eat, drink or smoke when using this product.

P301 + P312 + P330 – IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

P501 – Dispose of contents/container to hazardous waste collection point.

Protective gloves: The glove Material must be impermeable and resistant to the product/ the substance/ the preparation/ the chemical mixture. Selection of the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

Material of gloves: The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material: The exact break through time must be found out by the manufacturer of the protective gloves and has to be observed. When handling with chemical substances, protective gloves must be worn with the CE-label including four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.



All these notes refer to the coolant Glysantin 50 %. Please also read the information the manufacturer provides in his documents.

This cooling system is a scientific measuring equipment and is designed for use by technicians, engineers, and scientists. The cooler may only be used according to the instructions of this manual. Provisions, limitations, and operating conditions stated in this manual must be respected. Unauthorized modifications and alterations of the device are forbidden for safety reasons.



DAMAGED POWER CABLE OR POWER PLUG: Danger to life due to electric shock. Each time the cooler is used, check the power cable for damage.



ELECTRIC SHOCK WARNING DUE TO VOLTAGE PARTS INSIDE: Risk of injury due to electric shock. Never slide any items through slits or holes into the cooler.



MOISTURE: Risk of injury due to electric shock if moisture enters the cooler. To avoid the risk of water condensation, protect the cooler against extreme changes of ambient temperature.



TRIPPING HAZARD: Risk of injury from tripping over loose cables. Never position the cable in a way that it could become a tripping hazard.



HUMIDITY, DUST OR RADIATION: Humidity, dust or X-rays could damage the cooler. Never operate the cooler in humid or dusty environments or in places with high levels of X-ray radiation.



SHOCK AND VIBRATION: To avoid damaging the cooler, it must be firmly mounted and protected against strong shocks or vibrations. Use the cooler's mounting threads to secure it.



LIQUIDS DAMAGE COOLER: If liquids have penetrated the device: Switch the cooler off immediately, detach it from power and contact PCO's customer support.



DAMAGED COOLER HOUSING: If the cooler has been dropped or the cooler's housing is damaged: Switch the cooler off immediately, detach it from power and contact PCO's customer support.

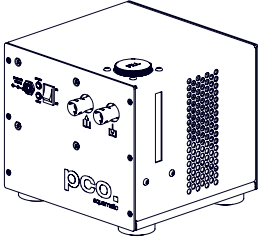
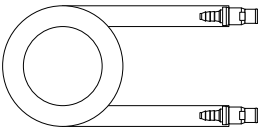
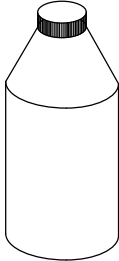


TIGHTLY SEALED GOGGLES: Wear eye/face protection.

A.2. System components



The following standard components are included in your scope of delivery:

Article	Picture	Details
pco.aquamatic III (order number: 30108000245)		chapter A.5
Water hose (2x 5 m) with NS212 male connection (order number: 10305000192)		chapter A.8
Power supply unit 12 VDC/ 2 A		chapter A.5
1 L Protect Glysantin 50 % (order number: 10305000192)		chapter A.1

Please read the instructions given in this document carefully. It contains useful information and advice to operate the cooling system in the intended way. The pco.aquamatic III must be operated with the cooling fluid Protect Glysantin 50 %.

If there are any questions regarding the pco.aquamatic III, please feel free to contact PCO or the local representative.

A.3. Overview

The following chapter provides an overview of the pco.aquamatic III.

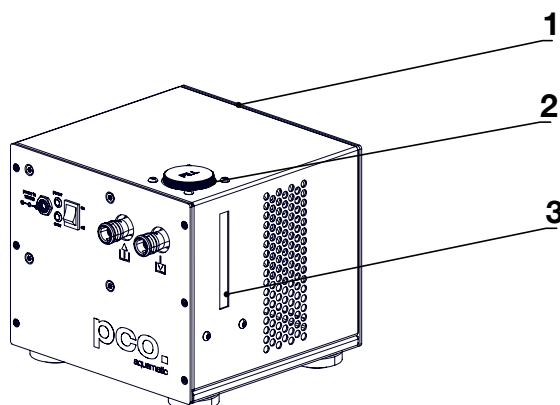


Figure A.1.: pco.aquamatic III overview.

Interfaces	
1	pco.aquamatic III
2	Fillport
3	Water-level window

A.4. Cooler interfaces

The cooling unit is equipped with various connections and signaling interfaces, as shown below.

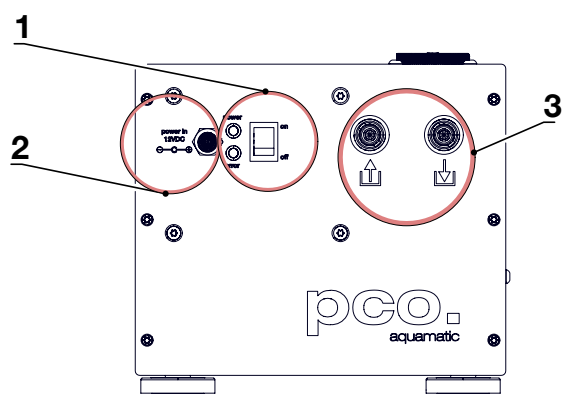


Figure A.2.: pco.aquamatic III front panel interfaces.

Interfaces	
1	ON/OFF switch and status LEDs
2	Power input

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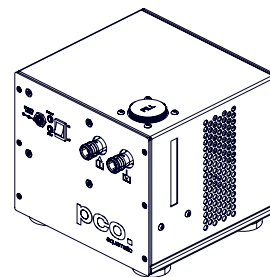
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Interfaces	
3	Water in- and outlet (2x G-1/8" thread)

A.5. Specifications

The pco.aquamatic III is described by the following data:

Description	Value
L x W x H	214 mm x 203 mm x 186.6 mm
Material	Steel
Color	Black
Max. delivery height	2.2 m
Max. flow rate	max. 32 l/h
Voltage	12 VDC
Max. power consumption	20 W



A.6. Flow chart

The arrows on the housing of the cooling unit indicate the flow direction.

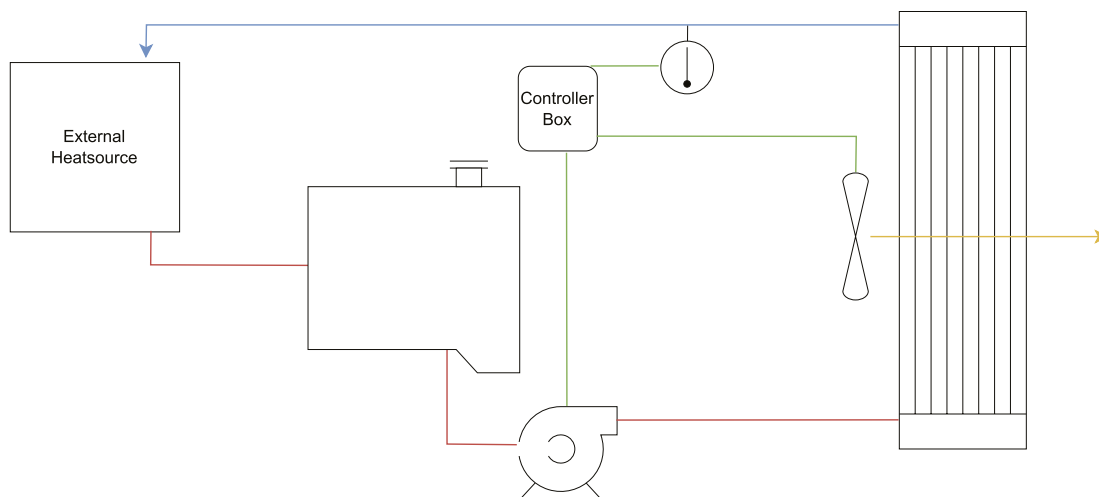


Figure A.3.: pco.aquamatic III flow chart.

A.7. Setting up the cooling unit

Take care to place the unit on a flat and firm surface. Do not cover the cooling vents of the unit. Ensure free airflow around the pco.aquamatic III for maximum cooling performance. All tubes and

power cords need to run kink-free. The cooling container should have a clearance of 5 cm/ 2 inches when in use. Full performance cannot be guaranteed if this is not observed.

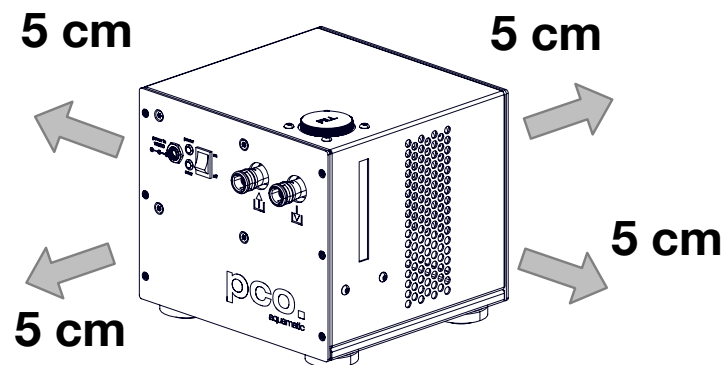


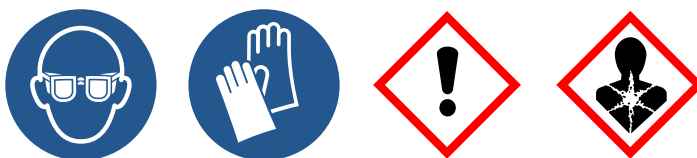
Figure A.4.: pco.aquamatic III distances.

In case of problems with the coolant or if there is any need of help in operating or handling the coolant or the unit, contact PCO or the local distributor.

A.8. First time installation

In the following chapter the use of the pco.aquamatic III and the procedure will be explained. Normally no maintenance and almost no care is required. The coolant's level of the reservoir (water tank) should be checked before commissioning or every ten operating hours.

Only use Protect Glysantin 50 % for the pco.aquamatic III. Do not use or add any other coolant or normal water.

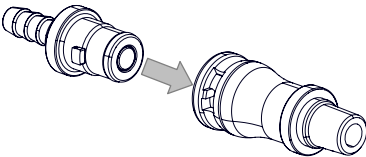
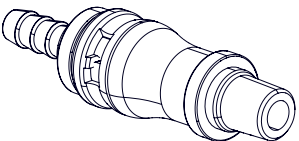
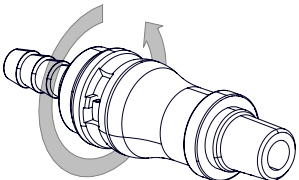
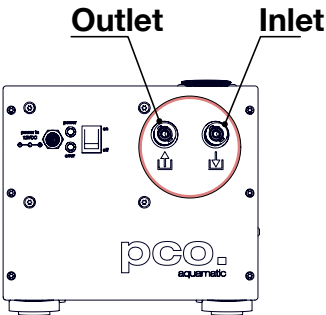
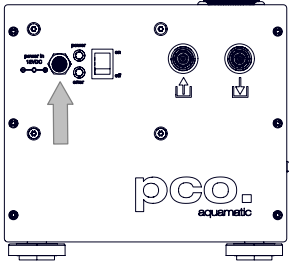


NOTE

The recommended service interval for the change of the coolant is four years.

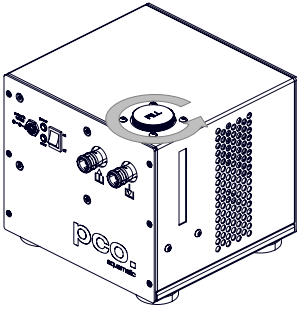
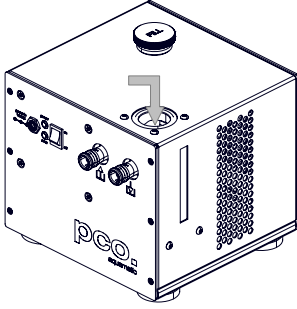
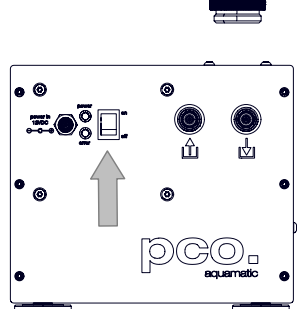
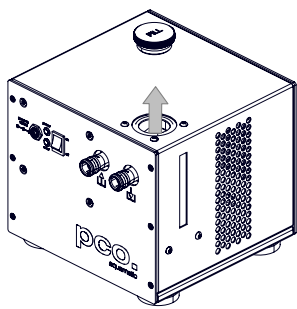
Complete the following steps for a successful first-time installation.

Follow steps 1-7

Article	Picture	Details
Step 1		Connect tubes to cooling unit and camera by inserting the connector into the intended counterpart.
Step 2		NOTE: Subsequently turn both connections into each other.
Step 3		NOTE: Turn both connectors until they are interlocked together. Make sure that none of the hoses are kinked.
Step 4		The pco.aquamatic III has two different connections: One of them is the input for the water connection, the other one is the output . As shown, both are clearly marked and must be used as such. Regarding the camera, there is no prescribed flow direction concerning the water.
Step 5		Connect to power.

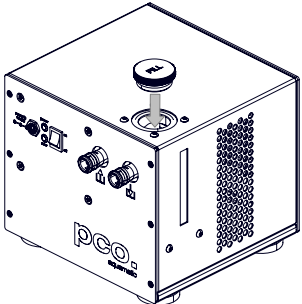
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Article	Picture	Details
Step 6		Open tank cover.
Step 7		Slowly fill in the coolant.
Step 8		Turn power switch on (I). Refill the cooling reservoir as needed to keep the level.
Step 9		While the cooling liquid flows back to the tank make sure there remains no air in the system - this may take a few minutes (move hoses if necessary).

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Article	Picture	Details
Step 10		Close the tank cover. The pco.aquamatic III is now ready to use.

The cooling liquid tank is full when the liquid level is approximately 1-2 cm from the top of the tank. The integrated pump only works when the bump chamber is completely filled. To ensure this, move hoses or remove air by evacuating. The usable tank volume amounts 200 ml.

NOTE:

The hose connectors are waterproof in not connected state. Maybe they lose one drop of cooling liquid from time to time. There is no need to empty the hoses while storing the camera system.

A.9. Mechanical dimensions

Following illustrations show the mechanical outlines of the pco.aquamatic III.

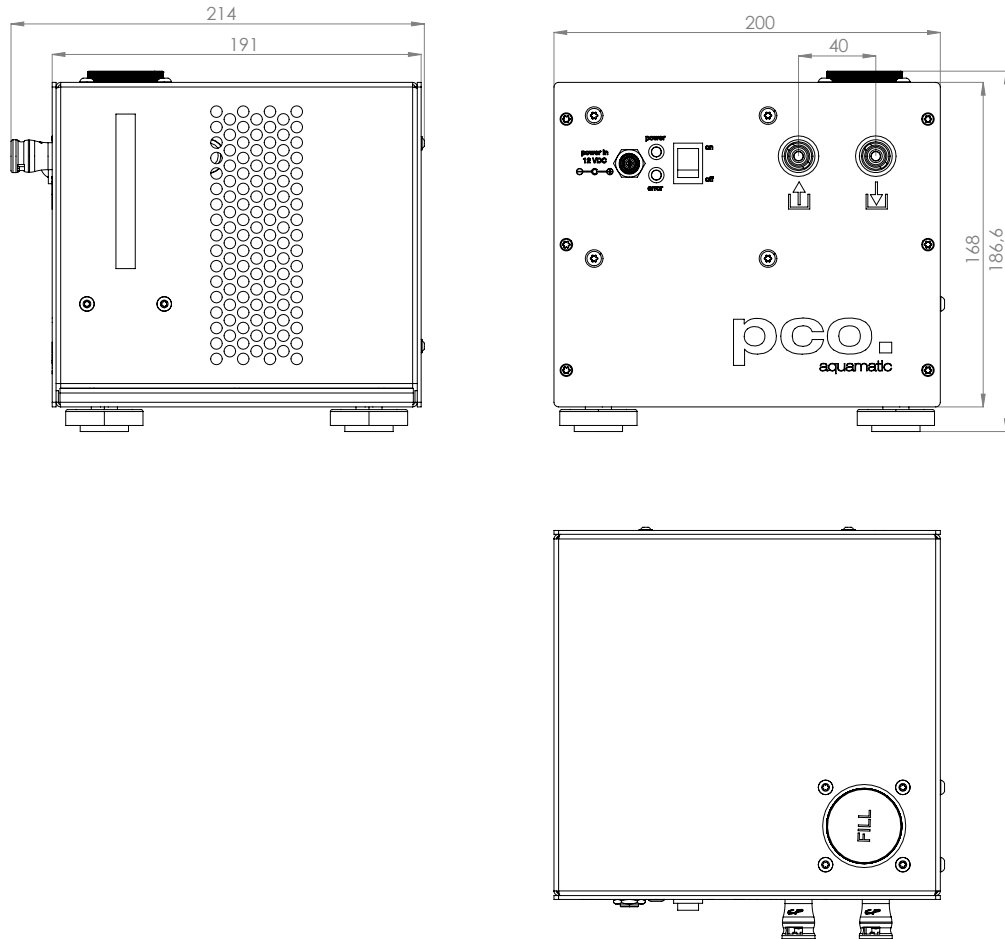


Figure A.5.: outlines of pco.aquamatic III (all dimensions given in mm).

A.10. Operational and storage data

The following table shows the usage data to prevent any errors:

Description	Value
Max. system temperature	60 °C
Input	12 VDC/ 2.0 A
Operating temperature	+5 °C to +40 °C
Storage temperature	-10 °C to +60 °C
Storage conditions	Dust-free and clean (Empty the cooler for storage)

A.11. Errors

The pco.aquamatic III can display various errors. These are listed in the following table:

Error	Sound	LED
Fan does not rotate	Fast beeping (two times per second)	Error LED flashes every second
Error LED flashes every second	Alternate beeping: high/low (once per second a high and a low tone)	Error LED flashes every second
Temperature too high (48 °C)	Slow beeping (one time per second)	Error LED lights up continuously
Temperature sensor has an error or is not plugged in	Slow beeping (one time per second)	Error LED and power LED flash alternately (once per second)

If several errors occur in parallel, the signal priorities are as follows:

Pump error: Priority 1

Fan error: Priority 2

Temperature error: Priority 3

B. Troubleshooting

If any questions or problems should arise, feel free to use the following options:

- Contact us via email: support@pco.de
- Fill out the [support ticket](#) on our website (Click [here](#) for the chinese version)
- Read the [pco.troubleshooting manual](#) for help with PCO software product

C. Warranty

Excelitas PCO GmbH warrants the original purchaser for a period of two (2) full years, calculated from the date of purchase, that the equipment sold is free from defects in material and workmanship. In the event of a claim under this guarantee, the equipment is to be sent, including a description of the fault, to Excelitas PCO GmbH. Returned equipment will not be accepted without a ticket number, issued by the support team, support@pco.de.

Follow shipping instructions provided by the service technician. The unit should be returned in its original packaging if possible. In the case of damage caused by wear and tear, careless handling, neglect, by the use of force or in the case of interventions and repairs not carried out by Excelitas PCO GmbH, the guarantee ceases to be valid. This guarantee may not form the basis for any claims for damages, in particular not for compensation of consequential damages. The warranty is not transferable.

D. Recycling



To dispose your camera, send it to **PCO** or take it to a local recycling center.

The camera and all its accessories include electronic devices, which contain materials harmful to the environment. These electronic devices must be recycled.

E. About Excelitas PCO

PCO, an Excelitas Technologies® Corp. brand, is a leading specialist and Pioneer in Cameras and Optoelectronics with more than 30 years of expert knowledge and experience of developing and manufacturing high-end imaging systems. The company's cutting edge sCMOS and high-speed cameras are used in scientific and industrial research, automotive testing, quality control, metrology and a large variety of other applications all over the world.

The PCO® advanced imaging concept was conceived in the early 1980s by imaging pioneer, Dr. Emil Ott, who was conducting research at the Technical University of Munich for the Chair of Technical Electrophysics. His work there led to the establishment of PCO AG in 1987 with the introduction of the first image-intensified camera followed by the development of its proprietary Advanced Core technologies which greatly surpassed the imaging performance standards of the day.

Today, PCO continues to innovate, offering a wide range of high-performance camera technologies covering scientific, high-speed, intensified and FLIM imaging applications across the scientific research, industrial and automotive sectors.

Acquired by Excelitas Technologies in 2021, PCO represents a world renowned brand of high-performance scientific CMOS, sCMOS, CCD and high-speed cameras that complement Excelitas' expansive range of illumination, optical and sensor technologies and extend the bounds of our end-to-end photonic solutions capabilities.

The logo consists of the lowercase letters 'pco' in a bold, sans-serif font, followed by a solid black square.

An Excelitas Technologies Brand

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