user manual

pco.aquamatic III

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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.aquamatic III user manual 1.0.2

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Contents

1 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.

1.1 Safety

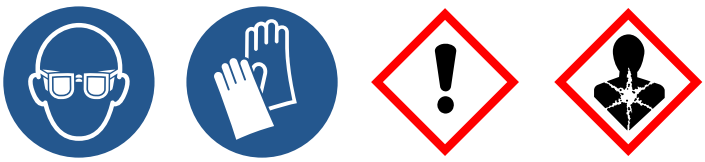
Hazard warnings
H302 – Harmful if swallowed.
H373 – May cause damage to organs through prolonged or repeated exposure.

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.

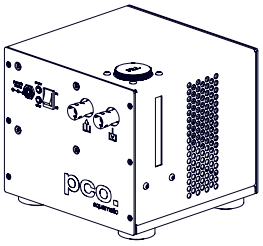
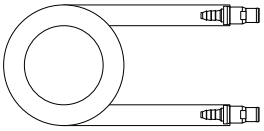
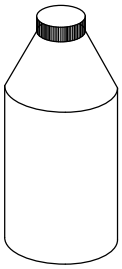
LIQUIDS DAMAGE COOLER: If liquids have penetrated the device: Switch the cooler off immediately, detach it from power and contact PCO's customer support.

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.

1.2 System components

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

Article	Picture	Details
pco.aquamatic III (order number: 30108000245)		chapter **1.5**
water hose (2x 5 m) with NS212 male connection (order number: 10305000192)		chapter **1.8**
power supply unit 12 VDC/ 2 A		chapter **1.5**
1 L protect Glysantin 50 % (order number: 10305000192)		chapter **1.1**

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.

1.3 Overview

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

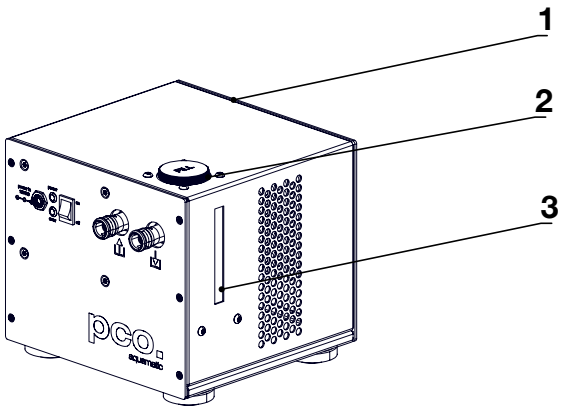


Figure 1.1: pco.aquamatic III overview.

	Interfaces
1	pco.aquamatic III
2	fillport
3	water-level window

1.4 Cooler interfaces

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

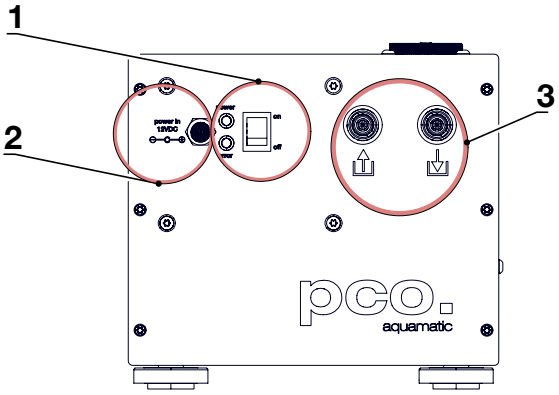


Figure 1.2: pco.aquamatic III front panel interfaces.

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

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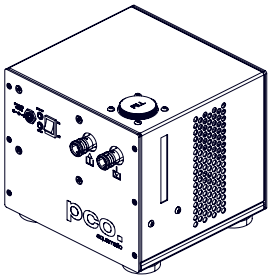
	Interfaces
3	water in- and outlet (2x G-1/8” thread)

1.5 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
Weight	4.2 kg (empty)
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



1.6 Flow chart

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

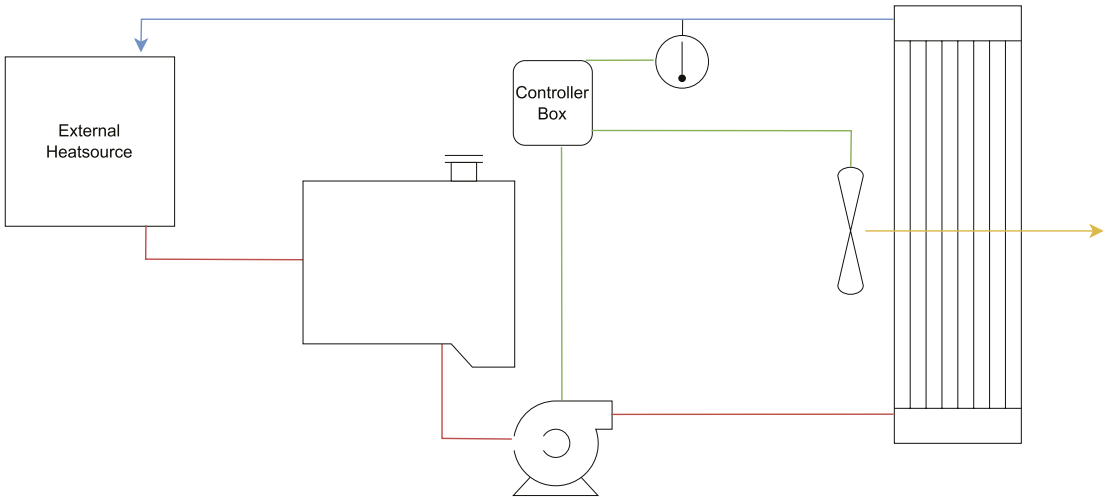


Figure 1.3: pco.aquamatic III flow chart.

1.7 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.

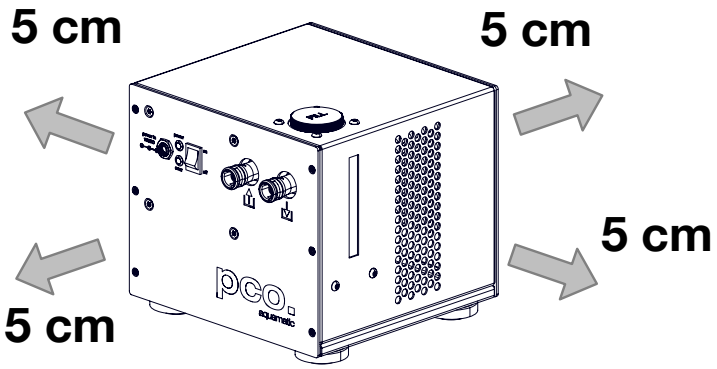


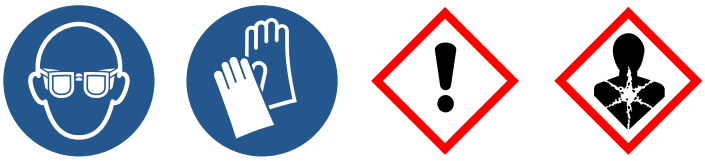
Figure 1.4: pco.aquamatic III distances.

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 local distributor.

1.8 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.

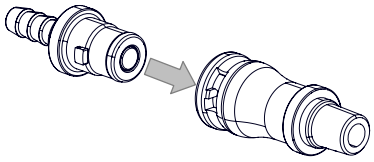
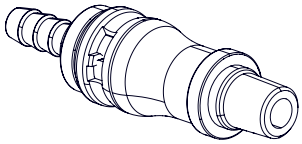
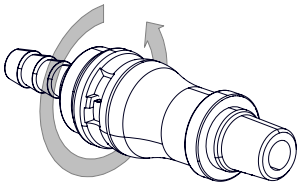
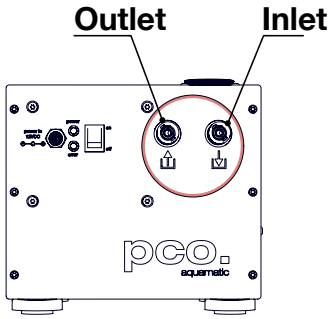
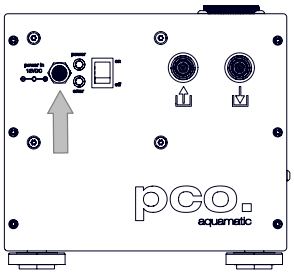
Only use Protect Glysantin 50 % for the pco.aquamatic III. Do not use or add any other coolant or normal water.



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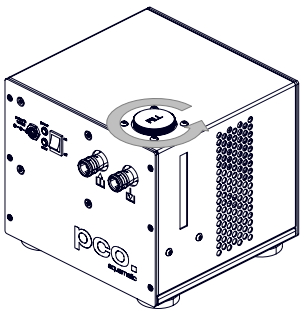
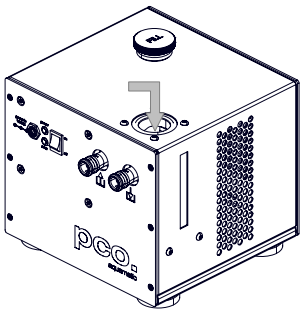
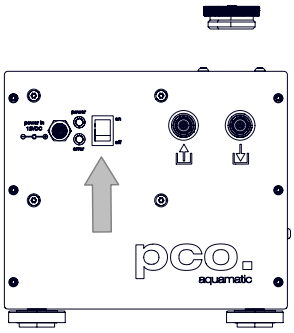
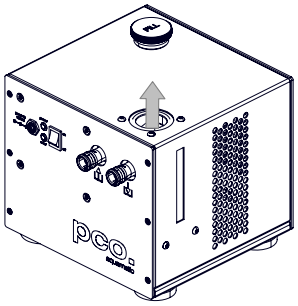
Article	Picture	Details
Step 6		Open tank cover.
Step 7		Slowly fill in the coolant.
Step 8		Turn power switch on (I). Refill the cooling reservoir as needed to keep the level.
Step 9		While the cooling liquid flows back to the tank make sure there remains no air in the system - this may take a few minutes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

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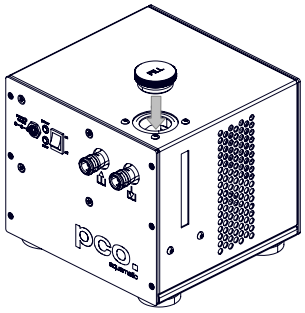
Article	Picture	Details
Step 10		Close the tank cover. The pco.aquamatic III is now ready to use.

The cooling liquid tank is full when 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.

1.9 Mechanical dimensions

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

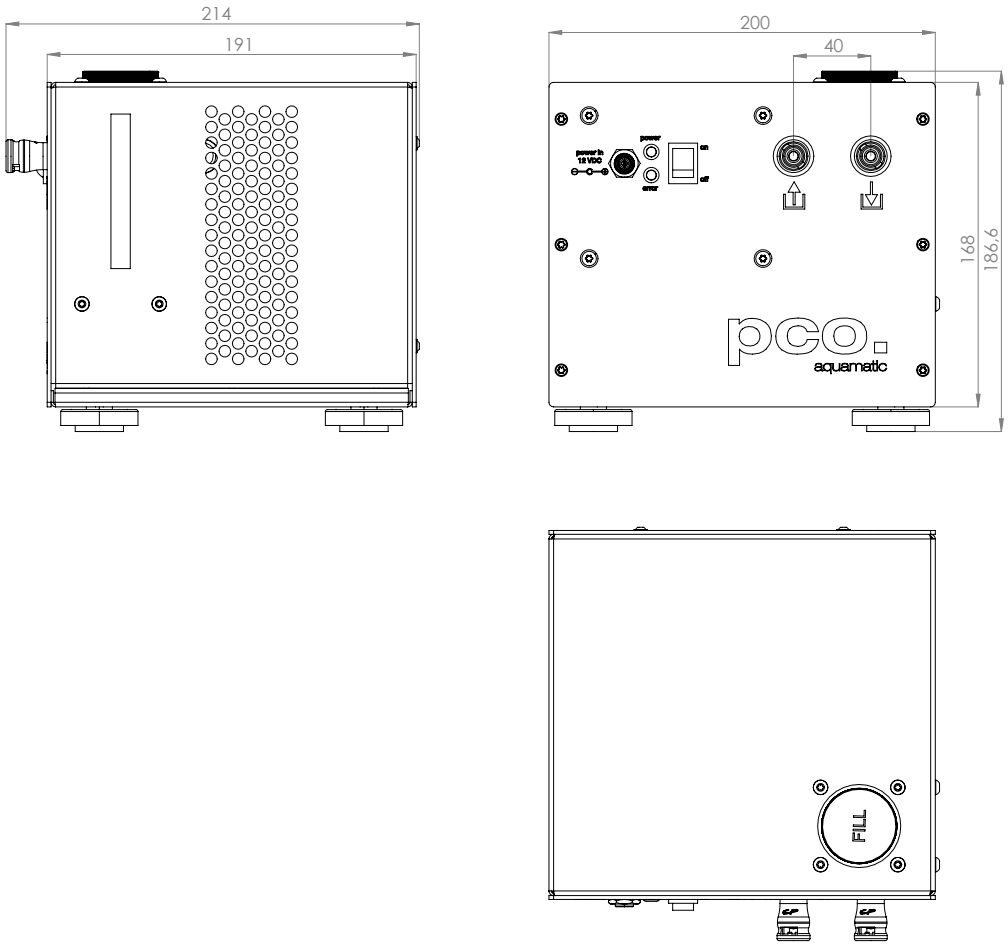


Figure 1.5: outlines of pco.aquamatic III (all dimensions given in mm).

1.10 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)

1.11 LED-Signals

LED	Accoustic signal	Status
Red light blinking	Sound	Error: Pump failure
-	Sound	Error: Fan does not rotate
Red light on	Sound	Error: System temperature too high
Green light on	-	Ready for operation

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

Pump error: Priority 1
Fan error: Priority 2
Temperature error: Priority 3

2 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.

3 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.

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