



**PURE O<sub>3</sub>-41W**

**PURE O<sub>3</sub>-87W**

**PURE O<sub>3</sub>-120W**

**PURE O<sub>3</sub>-150W**

**Installation – Operation – Service**

## 1 General Information regarding UV-C Radiation

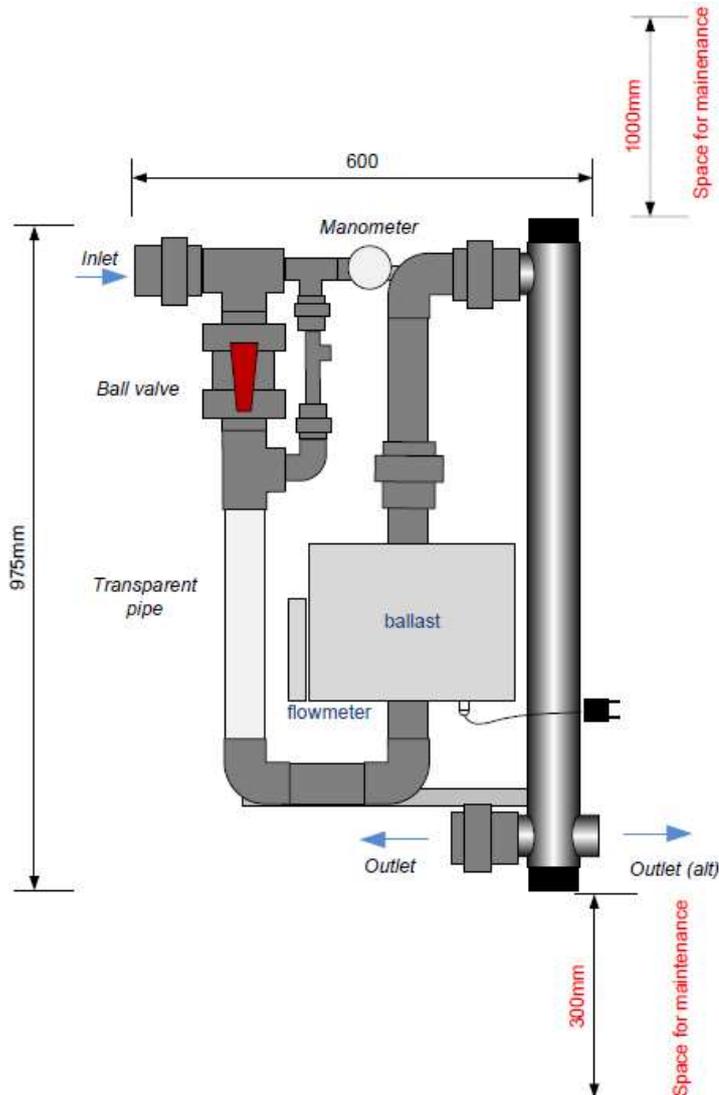
Ultraviolet light in the 200 to 280nm (nanometer) spectrum possesses a germ-reducing effect. The cell structure of bacteria, viruses, algae and other microorganisms is harmed most significantly by UVC radiation at 254nm wavelength. The genetic information (DNA) is modified in such way that microorganisms lose their ability to reproduce and eventually die.

In addition to the disinfecting effect, ozone is generated by the UV-C lamp at a wavelength of 185 nm in the air-filled gap between the lamp and the quartz tube. The air / ozone mixture is sucked in by a Venturi nozzle and injected into the water inlet. As a result of the strong oxidizing effect of ozone, the degradation of undesired substances as well as an enhancement of the disinfecting effect take place. Excess ozone is decomposed by the UVC radiation in the reactor.

## 2 Technical Data

Modell	Op. voltage	Op. pressure	Reactor		Ingress Protection (Ballast)	Weight	Flow Rate (max.)	Ozon-generation
			Material	Connection				
PURE O3 -41 W	230 VAC	1.5 - 3 bar	1.4404	Bonded socket joint 63mm	IP 65	26 kg	20 m <sup>3</sup> /h	2.7 g/h
PURE O3 -87 W								4.1 g/h
PURE O3 -120 W								6.2 g/h
PURE O3 -150 W								7.5 g/h

### 3 Dimension



### 4 Scope of Delivery

Before usage the lamp and the quartz glass tube must be installed. Please follow the steps in chapter 6. Please check whether the equipment is complete.

Modell	UV-C emitter	PVC-coupling 63 mm x 2" IG	PVC-end plat 2"	Operations manual
PURE O3 -41 W	41 W	1 piece	1 piece	1 piece
PURE O3 -87 W	87 W			
PURE O3 -120 W	120 W			
PURE O3 -150 W	150 W			

## 5 Safety



**Warning:** Ultraviolet light can cause damage to eyes and skin. Therefore, you should never try to access the light source while the device is in operation.

- Do not use the reset button (top side of the ballast) if a fault is indicated. The reset button is only used to reset the operating hours counter.
- Never run your UVC unit without water and never cover it up in operation!
- The device is supplied with a 2-pin grounded plug. If you want to use the device in a permanent installation, which may be conducted only by a qualified electrician, you must adhere to all applicable legal regulations.
- All local electrical regulations must be complied with.
- The device must be protected by a RCD (residual current circuit breaker).
- For maintenance tasks (cleaning of quartz glass tube or changing the light bulb) the power and water supply must be interrupted (pull the power plug or deactivate the RCD).
- The device must be protected against frost. If the device is full of water, it must be emptied (loosening the lower PVC screw connection). The storage of the device should take place in a frost-free and dry place.
- The device is constructed for a nominal pressure of 3 bar and therefore must not be operated at a higher pressure.
- If parts of the device are damaged (particularly the quartz glass tube) the UVC device may not be operated.
- The UVC lamps contain mercury and must be disposed of in an environmentally friendly manner if necessary.
- The PURE O3 system is to be used exclusively for water disinfection and oxidation for pool and pond water outside buildings, not for drinking water.

## 6 Installation

- After opening the transport packaging, please familiarize yourself with this service and operating manual.
- The frame of the device is connected to the bottom of the case with three hexagon screws (key size 10). After loosening the three screws you can remove the system from the packaging. The three holes ( $\varnothing$  8.5) in the frame are intended for attachment to a wall.
- **Never open the ballast (plastic housing with sticker), this will lead to immediate loss of warranty (safety seal).**
- Plan a sufficient distance for a lamp or quartz glass tube change (about 1 m above and about 0.2 m below).
- Avoid placing the system in a place to direct sunlight, which may cause malfunction due to overheating. The ambient and water temperature must not exceed 40 ° C
- When installing the **PURE O3**, the reactor must be positioned **vertically**. As a result, condensation water forming in the quartz glass tube can optionally run down and be sucked out via the injector.
- Make connection to the water inlet and outlet, while sealing the PVC screw with e.g. Teflon sealing tape. Close the third PVC opening of the reactor with the end cap (rubber seal) supplied.
- Make sure that the water can drain freely from the system (maximum pressure in the system 3 bar)
- Open the ball valve (put the knob upright) and observe the system while you let in the water.
- Check the hydraulic leakproofness of the system before switching on the ballast. If necessary, tighten all screw connections on the piping system by hand. The manufacturer assumes no liability for water damage of any kind
- Closing the ball valve increases the partial flow flowing through the injector and the resulting negative pressure. With the valve on the flowmeter (float), the amount of intake air can be regulated



## 7 Commissioning/ status display

- Insert main power plug→ after a few seconds preheating time the device is in operation.
- The models **PURE O3-41W** and **PURE O3-87W** have one indicate on the ballast housing to indicate the operating status of the UV-C light source:
  - green:** In operation (after preheating)
  - red:** Lamp is missing, defective or is not properly connected

- The Models **PURE O3-120W** and **PURE O3-120W** feature 2 LEDs with more detailed output

- red and green flashing:** Lamp is missing, defective or is not properly connected.
- red glows and green flashes:** Starting the UVC lamps (preheating).
- Red goes out and green lights up:** In operation (after preheating).

- If both LEDs are flashing, the lamp may be defective or it may not be properly connected. If both are not the cause, please contact your trader or the manufacturer.
- The cause of a temporary failure of the system may be overheating of the ballast (eg due to intense sunlight). If possible, eliminate heat sources nearby the ballast. When the power plug is unplugged or the power supply is disconnected, no LEDs are lit..
- Never use the reset button (upper side of the ballast) if a fault is indicated. The reset button is used to reset the operating hours counter.

The ballast gives you the opportunity to evaluate status messages based on the LED display (**PURE O3-120W** and **PURE O3-120W**) :

Ballast Status	LED green	LED red	Description	Possible source
Start condition not fulfilled	sustained flash	sustained flash	Ballast waiting for startup	Under- / overvoltage Start at over-temperature No lamp / Lamp plug not connected
Ballast start / preheating	flashes	on	Starting lamp / preheating	
Ballast working	on	off	In operation / normal mode	
Error temperature	off	flashes 1x	Shutdown at overtemperature; impermissible temperature; too high ambient temperature	wrong installation position; no heat dissipation due to too small housing surface
Error mains voltage too small	off	flashes 2x	Shutdown in case of wrong mains voltage	Mains voltage lower mains voltage lower limit
Error mains voltage too high	off	flashes 3x	Shutdown in case of wrong mains voltage	Mains voltage higher mains voltage higher limit
Error lamp voltage	off	flashes 4x	Shutdown by combustion voltage monitoring; Burning voltage too high or too low (abnormal operation)	wrong lamp type; Lamp at end of life; Rectifier effect of the lamp; broken lamp
Error overcurrent half bridge	off	flashes 5x	Shutdown by overcurrent; Half bridge (abnormal operation)	Error in lamp cabling; Short circuit in lamp cabling; Start without lamp;
Error preheating overcurrent half bridge	off	flashes 6x	Shutdown by overcurrent; Half bridge (abnormal operation)	Error in lamp cabling; Short circuit in lamp cabling;

If the problem persists, contact your dealer or the manufacturer.

## 8 Maintenance



### 8.1 Lamp replacement

**Always disconnect the main power plug before maintain the device!**

- In order to ensure a high level of effectiveness of the systems, a new UV-C lamp should be used after approx. 8000 operating hours. The operating hours are registered by the display on the ballast.
- Retract plastic cap (printed with safety labels). Loosen the three Allen screws in the black plastic cap with a 3mm Allen wrench.
- After lifting the black plastic cap you can remove the green-yellow grounding conductor wire from the socket. Now gently pull the light bulb attached to the white plug-in socket out of the housing
- If the lamp is pulled out a piece of the stainless-steel housing, loosen the four-pin plug connection and replace the lamp with a new one.



- Gently push it into the quartz glass tube inside the stainless steel housing. Avoid touching the light bulb with your skin.
- Re-attach the grounding conductor to the flat plug. Attach the black plastic cap with the three Allen screws. Make sure that the cap and the O-ring seal are positioned properly and that the grounding conductor is not jammed.
- Push the yellow plastic cap all the way forward onto the black plastic cap.
- Set the operating hours counter to "0" by means of the reset button on the upper side of the ballast.

### 8.2 Quartz glass cleaning and replacement

**Always disconnect the main power plug before maintain the device!**

- You should check on a regular basis (approx. 2 times a year) whether lime has built up on the quartz glass tube. Such build-up negatively impacts the effectiveness of the device and must be removed.
- Wear gloves and goggles when replacing the quartz glass tube.
- Remove the UVC lamp as described in 7.1. Remove stainless steel flange by loosening 3 Allen screws with a 4mm Allen wrench (There are spring washers under the Allen screws heads.). You can now gently pull out the flange. Avoid hitting the quartz glass on metal parts.

- Now loosen the three screws on the black cap on the bottom of the reactor. Then you can remove the cap from the reactor without disassembling the white hose. Now you can unscrew the hose fitting and pull off the white hose (pay attention to the cone sealing ring!). Now you can loosen the Allen screws (4 mm Allen key), therefore you have to turn the elbow fitting slightly to get to the third screw head. Before removing the flange, hold the upper free end of the fused quartz tube with a finger to protect it from impacting the inside wall of the reactor

- After removing the lower flange, you can pull out the quartz glass tube upwards.
- Clean the quartz glass tube with a commercially available decalcifier. For quick and effective cleansing, we recommend using a decalcifying gel. After the exposure time of the decalcifying agent rinse the quartz glass with clear water and then wipe it off with a soft cloth. Avoid cleaning the quartz glass tube with rough items.



- Under normal circumstances the quartz glass tube must be replaced only when it's damaged. The tube must be pulled from the stainless-steel connection gently and with a slight twisting motion (Wear gloves!)
- Now carefully insert the new quartz glass tube into the stainless-steel connection. Note that there are 2 seals (o-rings) inside the stainless-steel flange. We recommend replacing the o-rings along with the quartz glass tube. The o-rings are available as spare parts. Using silicon lubricant when replacing the o-rings will help avoid leakages later on. Make sure that the quartz glass tube is pushed all the way in.
- On both sides attach the three Allen screws (Don't forget the spring washers and the flat plug!). Tighten the screws firmly and equally. Make sure the O-ring fits exactly to the underside of the flange.
- Insert the light bulb into the quartz glass tube and continue as described in 7.1 *Lamp replacement*. Attach the ground conductor wire to the flat plug. Attach the black plastic cap with the three Allen screws. Make sure the cap is positioned properly and that the grounding wire is not jammed. Push plastic cap all the way forward onto the black plastic cap.

### 8.3 Change of air-ozone mixture hose

**Always disconnect the main power plug before maintain the device!**

- Ozone has a corrosive effect on organic substances. The high-quality materials used in the system are also subject to long-term wear and should therefore be renewed regularly. We recommend to do this in the rhythm of the lamp change.
- Remove the lower black cap as described under 7.2 in order to loosen the hose at the angled fitting
- The other hose end at the injector is released in the same way.
- Cut the exchanged hose between the cutting rings and the valve.
- The module supplied as spare part is assembled in reverse order. When installing, pay attention to the correct direction of the valve (black arrow on valve = flow direction from the reactor to the injector).
- Then push union nuts, cutting- and conicalrings of the exchanged unit onto the replacement hose (hose end approx. 3 ... 4 mm above conical ring) and push free hose ends onto connecting pieces in the two screwed connections and hand-tighten each with union nut.
- There are two non-return valves in the supply line to the injector, which can be disassembled and cleaned if necessary (for example, if no air is drawn in at the flowmeter despite the valve being opened). The check valve in the hose is provided with a bayonet lock, the second is located directly at the air inlet of the injector and is accessible by unscrewing the black cap nut. After disassembly, the individual parts (spring, ball, sealing) can be cleaned and dried, mounting in reverse order.



## 9 Troubleshooting

- If the red LED lights up permanently, there is a malfunction of the UVC lamp or the ballast. First, check the tightness of the UVC lamp in the socket (see 7.1 Lamp replacement) and replace the UVC lamp.
- Cause of a temporary breakdown of the system can be too strong heating of the ballast (e.g. by intense solar radiation). Eliminate, as far as possible heat sources in the vicinity of the ballast.
- Should the problems not be resolved, contact your dealer or the manufacturer.

## 10 General Instructions / Disposal

- **To keep your UVC device operating at maximum capacity we recommend replacing the light bulb every 8,000 hours of operation.**
- The housing of your UVC device is made of corrosion and acid-resistant stainless steel, a quality with extremely long lifetime and reliability.
- Before maintenance make sure to disconnect the power and turn off the water supply.
- The tube containing the light bulb is high-quality quartz glass and available as a spare part.
- Before activation check all connecting elements for leakages.
- The packaging materials are recyclable.
- To dispose the UVC units and all spare parts and consumables, please contact a regional active waste disposal company.
- Used or defective bulbs contain mercury. Don't dispose the UVC lamps in the regular trash.



## 11 Warranty

The warranty of your UV-C device is limited to the device itself (light bulb and quartz glass tube are not included) and is valid for two years from the day of purchase. Please keep the original package in case you need to ship the device. Opening the ballast device will void your warranty. Please contact the customer service department at the retailer or the manufacturer.

Should the device become defective during the above mentioned warranty period you are entitled to warranty services according to the legal regulations.

The manufacturer does not grant warranty for damages caused by accidents or improper installation and use, as well as subsequent damages. The warranty is limited to the exchange of the defective device. The warranty is not transferable. Your legal rights remain untouched.

## 12 Spare parts

The following spare parts for the **PURE O3** are available:

Spare part list	
Article-No.	Article
510	UVC-Lamp 41 Watt (ozone-generating)
511	UVC-Lamp 87 Watt (ozone-generating)
512	UVC-Lamp 120 Watt (ozone-generating)
515	UVC-Lamp 150 Watt (ozone-generating)
641	Quartz glass sleeve for <b>PURE O3</b> (20x23x912)
620	Air-ozone hose with check valve
809	Sealing kit for Reactor <b>PURE O3</b>

**Please note that the intensity of the UV-C lamp decreases over time. We recommend a lamp replacement after approx. 12,000 operating hours (PURE O3-41W and PURE O3-87W), respectively 8,000 operating hours (PURE O3-120W and PURE O3-150W). With a longer use, the full disinfection performance can no longer be guaranteed.**

