Service and installation manual

ProfiPure medium pressure UV system

ProfiPure 100, 200, 300, 400, 500

IT IS NECESSARY THAT THE INSTALLATION TECHNICIAN BECOMES FAMILIAR WITH THE PROVIDED INFORMATION IN DETAIL BEFORE INSTALLING AND COMMISSIONING THE DEVICE.

CE

Lifetech

Lifetech s.r.o.
Kosinova 2116/19
612 00 Brno
Czech Republic

www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

Contents:

1. Product technical data

The table contains basic parameters that apply to all models.

Table 1: Technical data for all models

ProfiPure XXX		
Reactor		
Operating water temperature range	**°C**	15 - 40
Reactor mounting position	**-**	Horizontal (water inlet and outlet always at the top)
Maximum operating pressure	**bar**	4
Wiper mechanism	**-**	-
Material	**-**	Stainless steel AISI 316L (DIN 1.4404, ČSN 17349) with anti-corrosion surface treatment, quartz glass, vison sealing ring
Suitable for saltwater pools	**-**	Yes, max. 5 kg of salt per m ^{3} of water
Suitable for seawater pools	**-**	Yes, only with special surface treatment
Water flow direction	**-**	two-way
IP protection	**-**	54
Drain/vent valve	**-**	No
Reactor temperature measurement	**-**	Yes (bimetal - 65 °C)
UV intensity measurement	**-**	No
Switchboard cabinet		
Material and color	**-**	Steel, white RAL 9003 powder coated
Multilingual version	**-**	Yes, in the form of a sticker (CZ, EN, IT)
Options and functionality	**-**	✓ Alarms, ✓ Hours and cycles of UV lamps, ✓ Automatic notification of the imminent completion of maximum UV lamp hours.
Connecting the water flow sensor	**-**	No
Power cable length / Cable length to UV reactor	**m**	3 / 1.8
UV dose calculation	**-**	No
Measuring the lifespan of a UV lamp	**-**	Yes, operating hours, cycles – in the form of a USB key (data readable only by the manufacturer)
Remote control	**-**	No
Remote signaling	**-**	No
Logging	**-**	No
Remote IOT access	**-**	No
Maximum noise level	**dB(A)**	≤40

The table below details the individual parameters of the PROFIPURE series models. These parameters are not processed individually, so you need to select the column with the purchased model.

ProfiPure		100	200	300	400	500
Recommended flow rate [1)]	**m^3/h**	4.7/12	4.7/14	9/18	15/30	30/49
Number of lamps	**pcs**	1				
Max. lamp power	**kW**	0.3	0.3	0.3	0.4	1
Power control range	**%**	-				
Lamp type	**-**	LifeUVM 03	LifeUVM03	LifeUVM03	LifeUVM04	LifeUVM10
Quartz tube type	**-**	LifeUVM Q03	LifeUVMQ03	LifeUVMQ03	LifeUVMQ10	LifeUVMQ10
UV sensor	**-**	-				
Temperature sensor	**-**	Lifetech temperature sensor 65 °C (bimetal)				
Expected UV lamp life	**h**	5,000				
Switchboard cabinet						
User interface	**-**	LEDs				
Communication interface (Lifetech/customer)	**-**	- / -				
Power supply for UV lamps	**-**	Magnetic ballast				
Max. power consumption of the switchboard	**W**	270	270	270	420	800
Supply voltage	**IN**	230, 1 phase (L) + N + PE				
Frequency	**Hz**	50				
IP protection	**-**	54				
Main fuse of the switchboard cabinet	**-**	Fuse 4 A/T			Fuse 5 A/T	Fuse 10 A/T
Maximum operating temperature	**°C**	90 °C (fitted with bimetal 95 °C)				
Recommended short circuit protection	**-**	6 A characteristics C			8 A characteristics C	16 A characteristics C
Power box dimensions (W/L/H)	**mm**	347/171/82			411/256/107	
Power box weight	**kg**	5	5	5	7	7
Gross shipping weight	**kg**	8	8	8	14	14
Reactor						
Reactor length V	**mm**	225	225	225	375	375
Reactor width L	**mm**	112	112	148	168	168
Reactor height H	**mm**	73	109	109	109	109
Minimum distance area Z	**mm**	300	300	300	450	450
Diameter inlet/outlet (male threaded)	**mm**	48 (≅ 1 ½ ")	60 (≅ 2 ")	60 (≅ 2 ")	89 (≅ 3 ")	89 (≅ 3 ")
Reactor weight [2)]	**kg**	2	2	2	6	6

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1) Flow rates for public/private pool water. Corresponds to UV doses of 30 mJ / cm^2 at T10 = 95% for public, and 60 mJ / cm^2 at T10 = 95% for private. For heavily loaded pools, such as toddler pools or hot tubs, it is recommended to choose a UV system with higher performance or install LifeOX ® M technology.

2) Weight of UV reactor without water.

The manufacturer reserves the right to make technical changes.
If you require **a "Spare Parts and Accessories Catalog"** for this product, please contact the manufacturer.

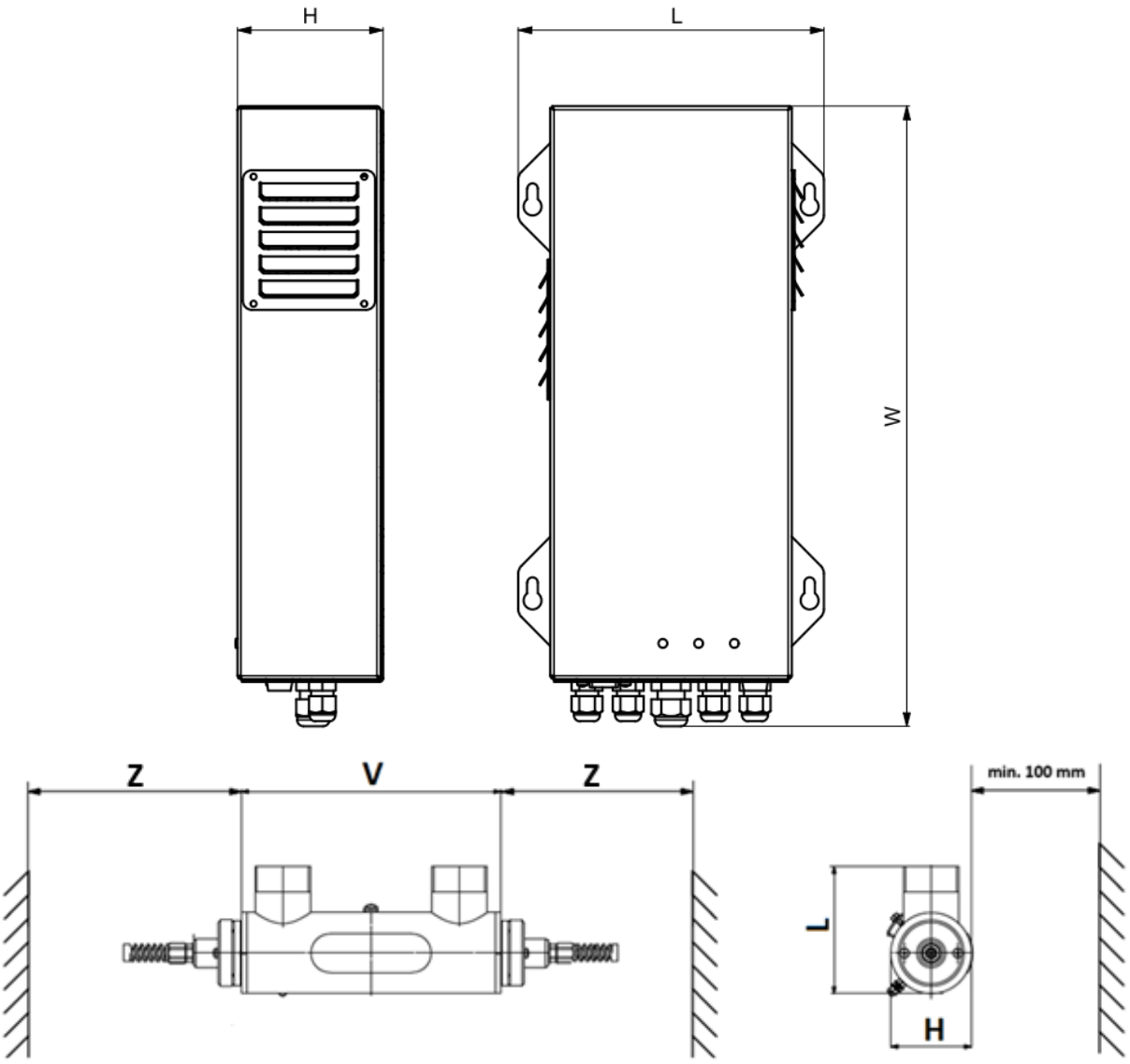

Figure 1: Drawing of UV reactor and control cabinet with mounting space

1.1. Chemical, operating and storage conditions

⚠ ATTENTION	
	**Failure to comply with the conditions for storage and operation of the equipment may lead to failure, unexpected behavior or malfunction of the installed equipment.**

Environmental requirements	
Operating conditions	The device is intended for indoor use.
Operating temperature	up to +50 °C, protect from direct sunlight!
Air humidity	max. 70% relative humidity, no condensation and no possibility of chemical fumes
Storage temperature	+5°C to +50°C
Transport temperature	-25°C to +50°C
Manufacturer's requirements for chemical parameters of treated water	
Iron content	max. 0.3 mg/l Fe
Manganese content	max. 0.05 mg/l Mn
Total hardness	max. 2.5 mmol /l (14° dGH)
Total alkalinity	max. 1.2 mmol /l
pH	7.2–7.8 (at max. values of total hardness and alkalinity max. pH 7.5)
Chlorine content	max. 3 mg/l (ppm)
Chloride content	max. 140 mg/l (ppm)
Other requirements	
Water pressure	max. 4 bar g
Vibration/shock	install in a vibration-free environment

⚠ ATTENTION	
	**The operator is obliged to check the chemical parameters of the treated water before installing the UV system. If it cannot be proven that the above requirements have been met, the manufacturer does not guarantee the efficiency of the device and the warranty will be lost.**

⚠ WARNING	
	**The most common problems in machine rooms that lead to damage to all pool technology equipment and loss of warranty** • **Absence of air conditioning (ventilation)** • **Chemical fumes from chemical containers (Chlorine fumes)** • **Uncovered accumulation tank (Chlorine fumes)** • **Excessive humidity** **All these aspects lead to visible oxidation of stainless steel and electrical components of the equipment.**

2. Safety and precautions for safe operation of the device

Read this chapter carefully before putting the device into operation and store the manual in an easily accessible place near the device.

2.1. Safety instructions marking

This manual uses the following symbols to distinguish different levels of danger:

⚠ DANGER
Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

⚠ ATTENTION
Indicates that precautions should be taken for a potentially hazardous situation that could result in minor or moderate injury.

⚠ WARNING
Indicates a situation which, if not avoided, could result in damage to the equipment. Indicates information requiring special attention.

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2.2. Safety symbols and their meaning

The following safety symbols are used on the device and in the product documentation. This also introduces all possible pictograms related to the UV system product and their meaning.

Table 2: Pictograms and their meaning.

Symbol	Meaning of the symbol	Description
	**Warning/Caution**	A symbol indicating that safety instructions must be followed or that a potential hazard may occur.
	**Dangerous voltage/ Electrical equipment**	Symbol indicating the presence of dangerous voltage and the associated risk of electric shock. The device can generate high voltage. High voltage is required to ignite the UV lamp.
	**Dangers of UV radiation**	Symbol indicating the danger of UV radiation. The device is equipped with a UV lamp that produces UV radiation.
	**Hot surface**	Symbol indicating a place or part of the device that could be hot and could cause burns or the feeling of a hot surface.
	**Automatic start**	Symbol indicating that the device can be controlled remotely. Automatic start occurs after the signal is applied. This may result in unexpected immediate start immediately after the mains voltage is applied.
	**Protective earthing**	This symbol indicates a terminal that is intended for connection to an external conductor for protection against electric shock in the event of a fault (or to a protective earth electrode terminal).
	**Fall hazard warning**	Symbol indicating the danger of falling.
	**Ground obstacle warning**	Symbol indicating the risk of falling due to obstacles on the ground.
	**Inhalation hazard**	Symbol indicating the risk of inhalation of hazardous substances.
	**Pressurized system**	Symbol indicating a risk of possible ejection, splashing or another pressure-related hazard.

Table 3: Pictograms and their meaning (continued).

	**Handling hazards**	Symbol indicating a handling hazard. The product is heavy.
	**Fire hazard.**	Symbol indicating the risk of fire.
	**Danger of substances hazardous to health**	Symbol indicating the danger of a substance hazardous to health.
	**Danger of toxic substances**	Symbol indicating the danger of a toxic substance.
	**Environmental hazards**	Symbol indicating environmental hazard.
	**DO NOT EXTINGUISH FIRE WITH WATER OR FOAM**	Symbol prohibiting extinguishing electrical equipment with water or foam equipment.
	**No entry to unauthorized persons**	Symbol prohibiting entry to unauthorized persons.
	**Protective equipment**	Symbols recommending protective equipment, namely safety glasses, hearing protection, safety helmet, protective clothing, protective gloves and work shoes.
	**Follow the manufacturer's instructions.**	Symbol indicating compliance with the manufacturer's instructions as stated in the manual or other documentation. The device may only be operated by a trained person who is familiar with the manual.
	**The device <u>is not</u> intended for sorted waste.**	Symbol indicating special handling when disposing of the product.

2.3. Personnel qualifications

Work on the device may only be carried out by persons with the appropriate qualifications, as shown in the table below.

Table 4: Qualification according to the activity performed.

Activity	Qualifications	Description
Assembly/Installation	**Service technician**	For the purposes of this manual, a qualified service technician is considered a person who has been demonstrably trained and authorized by Lifetech to work on the given device.
Initial commissioning and training of the operator or specialist		
Long-term outage		
Maintenance/Repairs		
The error is fixed by a specialist.		
Normal commissioning	**Trained professional**	A trained professional is considered to be a person who, based on their education, knowledge and experience and knowledge of the relevant provisions, is able to evaluate the assigned tasks and recognize possible dangers.
Service	**Instructed person**	An instructed person is considered to be a person who has been instructed about the assigned tasks and the possible risks of improper behavior and, if necessary, trained, and also instructed about the necessary protective equipment and protective measures.
The error is being corrected by the operator.		

2.4. Equipment risks

Furthermore, risks arising from installation, operation, maintenance, servicing or disposal of the equipment are mentioned.

2.4.1. UV lamps and their risks

The device is equipped with a UV lamp located in a UV reactor. UV radiation has the following properties:

- UV radiation can cause serious eye damage or even blindness. It causes skin burns and other very serious skin damage.
- Never look into a lit discharge lamp and do not expose unprotected skin to UV rays!
- Never turn on an uncovered UV source! The lamp must be placed in the UV reactor and the caps must be properly tightened!
- The quartz glass and the UV lamp are fragile, so handle them with care. Careless handling may damage them and cause injury. In the event of any damage to the quartz tube or the UV lamp, the device must be shut down and the quartz tube or lamp replaced. The UV lamp contains mercury, which is toxic!

2.4.2. Risk of electric shock

This is an electrical device that can cause:

- Never handle the device, power cords, or other electrical components with wet hands. Water or moisture can increase the risk of electric shock.
- Before each use, check the power cables or other signal wires for damage! All wires should be protected from sharp edges by means of conduit or gooseneck.
- The device must not be put into operation if the electrical connections or other wires related to the operation of the device are damaged!
- Before opening the switchboards, make sure that the system is isolated or disconnected from the electrical network!
- Replacement of the UV lamp and service work may only be carried out by an authorized company! The service technician must be trained to perform service work!
- The device has parts that are dangerous during operation because they are under voltage, move or rotate. If used incorrectly, operated incorrectly, or if their covers or safety devices are removed without permission, these parts can cause serious injury or material damage.
- If protective covers have to be removed for work (commissioning, servicing, repair), it must be ensured that they are correctly replaced immediately after the work is completed. If, in exceptional cases, the device must be connected to the voltage even though the protective covers are removed, the danger area must be closed off and marked with warning signs.

2.4.3. Electrical installation hazards

- The system may only be connected to an electrical network that has been installed by a qualified electrician in accordance with local regulations.

2.4.4. General warnings

- The system must be installed and used in accordance with the requirements of this manual. Any deviation may impair the safe use and operation of the system.
- Observe the safety regulations for electrical equipment!
- When handling the device and during the installation itself, ensure the use of protective work equipment.

2.4.5. User notice

- The system must not be used by persons with limited physical, sensory or mental capabilities.
- The system is not intended for children and they must not play with it.
- In case of longer downtimes, turn off the device using the main switch or disconnect it from the mains voltage.
- Do not operate this system at temperatures below 5°C.
- Network connections to systems must be easily accessible.
- The device is intended exclusively for professional use.

2.4.6. Other warnings

- When installing, replacing and putting components into operation, the manufacturer's installation and commissioning instructions must always be followed.
- Never put a device into operation that is not connected to the pipe or is not completely assembled!
- The device must not be put into operation if the UV reactor and other parts of the device are not filled with water or are aerated!
- The device must not be operated for more than 5 minutes without water flowing through the UV reactor!
- The system must not be used in explosive environments.
- Do not cover or block the intake and exhaust openings during operation.
- Do not insert any objects into the device.
- The operating areas where the equipment is located must not be used for other purposes or for storing unrelated materials. Escape routes must always be clear. Due to the risk of damage to pipes or equipment, no transport must be carried out here before exposed areas are mechanically protected. In the case of purchased parts, the rules given by the manufacturer must be strictly observed.

3. Safety measures resulting from risk analysis

⚠ DANGER	
	The operator undertakes to be familiar with all risks of the device and to apply all safety measures listed below to limit the frequency or completely avoid possible risks.

The following safety precautions are for the protection of the user and must not be modified or bypassed. The explanations and notes below are an important contribution to the safe operation of the device. However, they cannot cover all improper interventions and possibilities.

3.1. General safety precautions

The **ProfiPure** UV system is intended exclusively for powering the connected UV lamp and the associated disinfection of water flowing through the reactor. Any other use or conversion of the device is only possible after written permission from Lifetech.

Pay attention to the operator regulations. Follow local, national and international regulations. Follow the safety notes in this operating manual.

Follow the instructions of authorized personnel regarding
- safety regulations,
- special hazards arising from handling UV radiation,
- behavior in the event of defects and accidents.

Appropriate fire extinguishing equipment must be available and a plan must be prepared in case of fire.

For maximum safety, all persons handling the device must be familiar with the safety regulations and the operation of the device. The UV system must be used in accordance with the regulations. Using the device for a purpose other than that specified by the manufacturer carries unforeseen risks. After the intervention of unauthorized persons, all warranty and liability claims on the part of the operator are excluded.

Always comply with local applicable laws, occupational health and safety regulations, and environmental protection provisions.

If you as a user notice any faults or dangers, please inform the operator of the device or your supervisor immediately. No protective devices may be removed while the device is in operation. Never attempt to bypass safety devices. All safety and warning labels on the device must always be legible.

3.2. UV radiation precautions

⚠ DANGER	
	The device contains a UV lamp containing hazardous substances. Follow the manufacturer's instructions for handling and local regulations for subsequent disposal.

ProfiPure device contains a UV lamp(s). Never expose your eyes or skin to the ultraviolet lamp(s) when it is on. Never look directly at the light source. This can cause serious eye injuries or skin burns and can even lead to loss of vision in the event of prolonged exposure. When handling the UV lamp, we recommend using protective equipment, especially goggles, a suit and gloves. Any handling of the UV lamp with the device switched on or energized is prohibited.

UV lamps contain mercury, when the lamp is cold (i.e. at room temperature), metallic mercury droplets can be seen in the lamp bulb. During lamp operation, the mercury evaporates and forms a working gas due to the heating of the lamp (lamp body).

Mercury is highly toxic and must always be handled with care. This is because mercury can be absorbed through the skin and mucous membranes of the body. Mercury vapors can also be inhaled. Mercury can cause damage to the central nervous system, kidneys, and liver.

In the rare event that a UV lamp breaks or ruptures and releases mercury, the following precautions should be taken:

- If the lamp has been in operation, allow the lamp to cool and allow any mercury vapor to return to the droplets before removing the UV lamp from the reactor. The mercury should be contained in the lamp holder.
- If a lamp breaks during replacement, every effort should be made to recover all spilled mercury from the lamp.
- Follow the instructions in the mercury spill kit and make sure you wear appropriate protective equipment (respirator, protective gloves, full-body protective clothing) when collecting mercury.
- Disposal of waste containing mercury should be carried out in accordance with local regulations.

The lamp is subject to the ROHS and ROHS II directives. The UV lamp contains mercury and it is technologically impossible to reduce or completely eliminate the amount of mercury. The UV lamps used, which fall under the applicable exemption, also comply with the above standard. More detailed details can be obtained from the ROHS declaration on request.

Lifetech s.r.o.
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Czech Republic
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sales@lifetechozone.com
service@lifetechozone.com

3.3. Safety precautions for electrical equipment

⚠ DANGER	
	Risk of fatal electric shock. Before starting maintenance, disconnect the device from the mains and disconnect external mains voltage from the terminal block intended for signals, etc. Use replacement fuses of the same type and with the same current characteristics.

Before starting work on electrical equipment, it must be ensured that the relevant parts are not live and that there is no possibility of unintentional restart. The equipment may **only be opened** if the power cable has been disconnected. The power cable **must not** be reconnected if the equipment is open. Ensure and check that the mains is also disconnected for signal or other external conductors.
Working on equipment that is under voltage is **prohibited.**

In general, no work may be carried out on the control unit or components while they are live. If this situation cannot be avoided, such work must only be carried out in accordance with the local regulations on site (accident prevention regulations) by trained technical personnel.

Due to the risk of electric shock, it is not permitted to spray or wash with water or other conductive cleaning liquids in the rooms where the device is installed. In the event of a fire, extinguish the device with an extinguisher designed for extinguishing electrical equipment.

3.4. Safety precautions for assembly and installation of equipment

⚠ ATTENTION	
	Failure to follow safety instructions during handling may endanger the life of the affected person.

The operator undertakes to maintain order in the areas where the equipment is operated and thus minimize the risk of tripping, slipping, etc.

The operator undertakes to carry out regular checks for leaks of water, oil and similar liquids in the area of the installed equipment and also outside it, in order to guarantee safe escape from the area and prevent slipping and injuries from surrounding objects.

When handling, it is necessary to use protective equipment, especially helmets, gloves and work shoes. If a long stay in the premises with the equipment is expected, we recommend the use of ear protectors to minimize noise fatigue.

The system is designed to be lifted and transported beyond the base only using a suitable forklift or pallet truck.
The lifting equipment must be appropriately sized to safely lift the required load.
The forks of the device must fully extend from the opposite side of the system from the lifting device.
Only one modular section can be lifted at a time.

4. First aid procedure

⚠ ATTENTION	
	Failure to follow safety instructions may endanger the life of the victim and create a situation in which first aid must be applied.

In the event of failure of safety features and exposure to UV radiation, follow the instructions below.

4.1. UV exposure

Remove any clothing or jewelry near the burned area of skin.
Cool the burn with cold or lukewarm running water for at least 20 minutes.
Keep the victim warm.
Cover the burn with cling film.
Treat the pain from the burn and seek medical attention.
If your face or eyes are burned, sit as upright as possible.

4.2. Electric shock

Use a non-conductive object to push the victim away from the live conductive part.
Immediately turn off the electrical power to the device using the emergency switch or a higher-level protection system.
Keep the victim warm.
Immediately begin resuscitation of the victim and seek medical attention.

5. Product disposal

ProfiPure product falls within the scope of Directive 2011/65/EU (ROHS and RoHS II), as amended. The amount of mercury in the medium-pressure UV lamps used is above the declared limit of the ROHS Directive and an exemption is therefore required. The product does not contain any other restricted substances listed in Annex 2 of the ROHS Directive. The device is subject to Directive 2012/19/EU WEEE (large equipment).

UV lamps

	**Czech Republic:** For environmentally friendly disposal of the device, use collection points. Do not throw it into mixed municipal waste. **Other countries:** Please follow the regulations for recycling or disposal of electrical and electronic equipment in your country.

Device

	**Czech Republic:** The product can be returned to Lifetech free of charge for recycling or environmentally friendly disposal. For environmentally friendly disposal of the device, use collection points. Do not throw it into mixed municipal waste. **Other countries:** Please follow the regulations for recycling or disposal of electrical and electronic equipment in your country.

6. Description of the UV system and its use

The UV system always consists of two parts: a reactor, where the UV lamp is installed and the flowing water is disinfected, and a switchboard system, which powers the UV lamp itself and ensures communication with sensors or the customer.

Chemicals traditionally used for disinfection are harmful to the environment, including chlorine, chlorine dioxide or hypochlorite. UV systems offer a green alternative to traditional chemicals and are one of the best technologies for water disinfection. Water disinfection is guaranteed by a medium-pressure germicidal UV lamp. The basic difference between low-pressure (UVL) and medium-pressure UV systems (UVM) is the wavelength of the UV radiation and the pressures inside the UV lamp itself. Simply put, UV radiation has certain wavelengths that it is composed of, and the wider the spectrum of wavelengths, the more effective the UV disinfection. This is because each organism or substance is destroyed and decomposed by a specific wavelength.

A germicidal lamp emits light that converts electricity into ultraviolet radiation. UV lamps generate energy in the UV spectrum to destroy bacteria, fungi and viruses (microorganisms). Microorganisms include several different groups of disease-causing germs – bacteria, viruses, fungi, algae, parasites and protozoa. In addition, UV radiation is highly effective in eliminating cryptosporidium and giardia – chlorine-resistant organisms that are a major risk to human health. Another advantage of UV radiation is the absence of taste and odor.

When UV radiation is emitted, it travels through the reactor area and is directed to the cellular level. The target of UV radiation is the genetic material, nucleic acid – DNA. As UV radiation penetrates the cell and is absorbed by the nucleic acids, the genetic information is rearranged, disrupting the cell's ability to reproduce. A cell that cannot reproduce is considered dead because it is unable to multiply to infectious numbers in the host. The maximum absorption of UV light by nucleic acid, DNA, occurs at a wavelength of 260 nm.

By using medium-pressure UV lamps, the UV wavelength spectrum is in the range of 200 to 600 nm, making disinfection significantly more effective, instead of low-pressure UV systems that only produce UV radiation with a wavelength of 254 nm. In addition, trichloramines are also eliminated thanks to the medium-pressure UV lamp.

Trichloramine NCl_3 is the most harmful by-product of chlorine water disinfection. It is formed by the reaction of chlorine with substances contained primarily in the sweat and urine of swimmers. Trichloramine is very poorly soluble in water, and therefore is easily released as a gas into the air. Trichloramine causes asthma, red eyes, a typical pool odor and various other allergies. It causes

corrosion of indoor equipment. For example, in 1985, 12 people died in the Swiss town of Uster as a result of the collapse of the corroded structure of the pool hall.

It is well known **that bacteria and other microorganisms are able to repair their DNA damaged by ultraviolet (UV) radiation**. The so-called reactivation is a natural defense mechanism that has evolved over millions of years. The ability to self-repair is a major problem when disinfecting drinking water, swimming pools, wastewater or other liquids using UV technology.

The study confirmed **that medium-pressure UV radiation, which consists of multiple wavelengths, causes irreparable (permanent) damage to bacteria and microorganisms**, which low-pressure radiation with a single wavelength (so-called monochromatic) cannot. In every industry where UV radiation is used to disinfect water, the operator must be sure **that the treatment is permanent**. This is the reason for using medium-pressure UV systems!

The UV system is equipped with a medium-pressure LifeUVM ® lamp, which is much more effective than low-pressure and amalgam UV lamps.
LifeUVM ® medium-pressure UV lamps are designed for the treatment of swimming pool water, drinking water, process water, ballast water and waste water. They are used for effective disinfection, prevention of reactivation of microorganisms, reduction of bound chlorine and some organic substances and decomposition of dissolved ozone or chlorine. As part of the advanced oxidation technology LifeOX ®, the UV system provides very effective disinfection and removal of undesirable substances.

Combined chlorine is responsible for the unpleasant chlorine smell, eye and respiratory problems, especially asthma, and is also responsible for corrosion of swimming pool structures. Reducing combined chlorine in pool water therefore protects the health of all pool visitors and protects the building structure itself, which leads to savings in repair costs. **The latest version of the German standard DIN 19643 clearly states: Only UVM systems (medium-pressure UV systems) can properly disinfect pool water and reduce the level of combined chlorine. Low-pressure UV systems, including amalgam UV-C, are therefore not suitable for these purposes.**

Advantages of LIFETECH PROFIPURE UVM®

- Unique medium-pressure UV lamp LifeUVM ® with a power of only 250 W
- Unique lamp cable system for easy lamp replacement
- Robust 316L stainless steel UVM reactor that is electrochemically polished to create a mirror-like interior surface
- Up to 35% more UV radiation thanks to reflection on the interior mirror
- The smallest and most compact medium-pressure UVM system
- Easy installation and maintenance
- LED indicator for lamp replacement
- USB key for lamp monitoring
- UV reactor temperature monitoring
- Power supply temperature monitoring

Learn more on the manufacturer's website:
https://lifetechozone.com/en/app/private-pools/

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7. Site selection and mechanical arrangement of components in the engine room

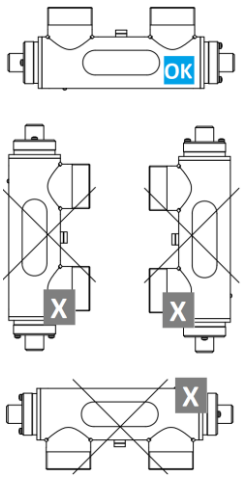
⚠ WARNING	
⚠	**The UV system must have surrounded space for servicing and handling the UV lamp, quartz glass or other parts of the reactor! Observe the minimum distances specified in the drawings in chapter 1. Installation must always be carried out outside the pool.** **Humid air, dust particles and impurities in combination with aggressive vapors/air (such as chlorine vapors, hydrochloric acid vapors, salt air, etc.) can cause corrosion of the UV system or electrical components of the device.** **With a temperature difference of 10 to 15°C between the water flowing through the reactor and the ambient temperature (engine room), moisture condensation can occur on the surface of the metal/stainless steel parts of the reactor. This condensation, together with the aggressive environment of the engine room, can cause oxidation of the stainless steel and thus permanently damage it.**

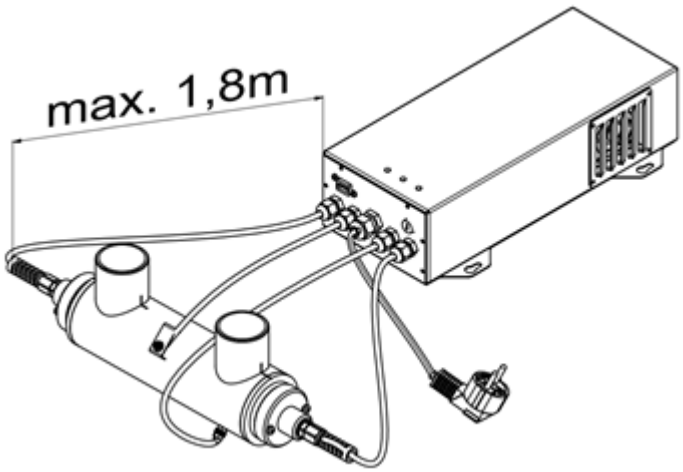
To place the entire device, choose a location that is well ventilated with minimal possibility of water condensation, minimal possibility of oxidation of surfaces by vapors from pool chemicals and without access to direct sunlight. Device ProfiPure It should never be installed behind the pH and chlorine dosing or the salt electrolysis system in your pool. The most suitable place to install ProfiPure is behind the filter.

The UV reactor must always be in a horizontal position with the water inlet and outlet from the top to prevent aeration of the reactor. The water inlet and water outlet are interchangeable. The UV lamp must always be in a horizontal position! The correct and incorrect placement of the reactor is shown in the figure 2.

Note: Use a spirit level when installing the UV reactor. An incorrect horizontal position of the UV lamp by more than 3° may cause errors in the lamp ignition or significantly reduce the emitted UV radiation intensity.

Install the UV power supply cabinet at a distance of max. 1.8 m from the UV reactor, similar to Figure 2or extending the wires!





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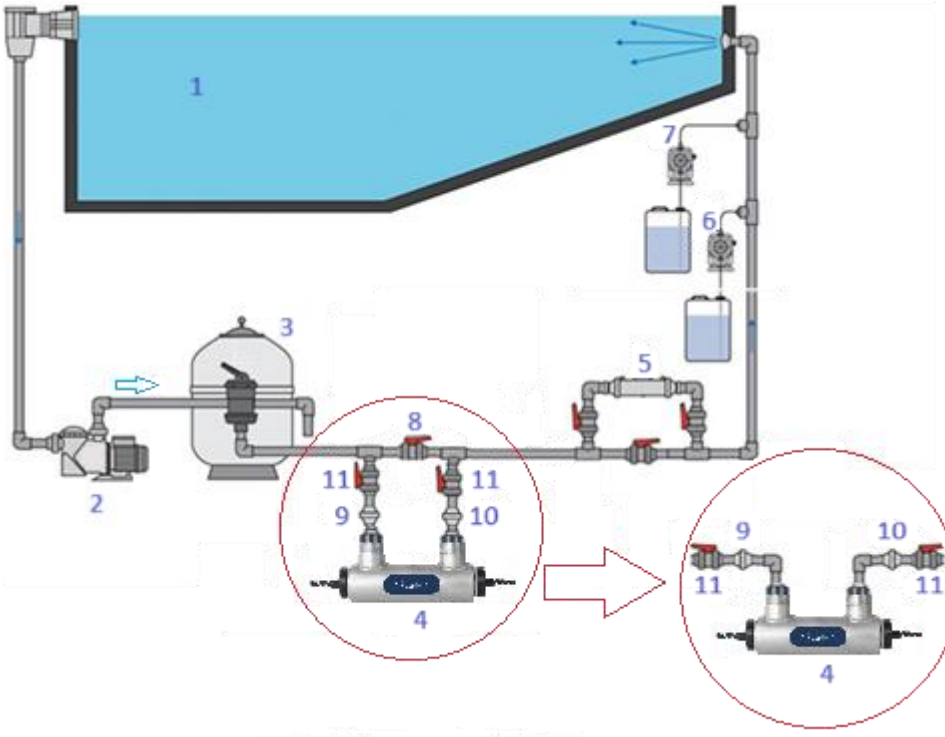
sales@lifetechozone.com
service@lifetechozone.com

Figure 2: Example of correct placement of the UV reactor in the engine room when using a UV reactor stand.

7.1. Mechanical part of UV reactor installation

- Install the UV reactor in the pipe according to the procedure described in chapter 7. There must be at least 350 mm of free space around the reactor on both sides for service and operation. We recommend that the reactor be set back at least 100 mm from the wall.
- It is advisable to use PTFE, Viton, EPDM or silicone gaskets as sealing for connecting flanges.
- The reactor must be mechanically fixed. This can be done, for example, by attaching the connecting flanges to the mounting frame or building using a bracket. For solid metal pipes in which the reactor is mounted, no additional fixing is usually required.
- To secure the reactor body, use suitable clamps, preferably made of stainless steel or at least with a rubber seal. This will prevent oxidation of the reactor body surface.
- Variations of reactor installation in the pipeline are shown in figure number **3. We recommend installing valves** before and after the reactor or placing the device in a bypass for possible service.
- The reactor can also be installed without a bypass. In this case, we recommend placing valves before and after the reactor for service and replacement of the quartz glass.
- Never install a UV device after a pH regulator, chlorine dispenser or salt electrolysis system.
- We recommend installing sand and glass traps before and after the UV reactor. A sand trap with a mesh size of 0.2-1 mm and a glass trap (in case of mechanical damage to the quartz glass) with a mesh size of 1-5 mm. The design of the traps must meet the installation requirements (flow, pressure, material - salt pool, hydraulic losses, etc.). An example of a glass and sand trap is illustrated in Figure 5.



1- swimming pool
2 - filtration pump
3 - sand filter
4 - UV system
5 - heating
6 - Cl dosing
7 - pH dosing
8 - UV system bypass
9 - sand trap
10 - glass catcher
11- Service valves

Figure 3: Recommended connection diagram of the UV system to the pool technology.

Figure 4: Example of UV installation in bypass.

Figure 5: Example of sand trap and glass trap.

- Insert the UV lamp (1) into the UV reactor. The lamp is supplied with all components by the manufacturer and you only need to carefully insert it into the quartz glass (1). The procedure for replacing the UV lamp in chapter 12.1. The lamp with the USB key is supplied in a protective case. When handling the discharge lamp or quartz glass, wear clean cotton gloves. Do not touch its surface with bare hands! If the surface is dirty, clean it with alcohol and a clean cotton cloth or paper wadding. The situation is illustrated in Figure **6**.

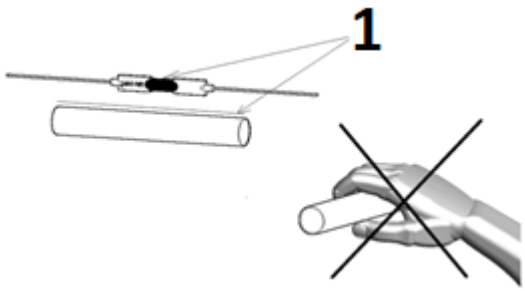


Figure 6: Cleaning the surface of the UV lamp and quartz glass.

7.2. Mechanical part of power switchboard cabinet installation

- The dimensions of the UV system switchboard vary depending on the model. For specific dimensions, it is first necessary to know the exact model of the **ProfiPure device**, which can be found, for example, on the device label.

- Place the UV system switchboard using 4 pcs. screws in a suitable way on the wall or a suitable stand. The drilling dimensions are shown in figure number 7. The maximum distance from the UV switchboard to the UV reactor is limited by the length of the wires shown in figure 2.

- To route the wires between the UV reactor and the UV system switchboard, prepare, for example, insertion channels for wires similar to the one in Figure 29, or the wiring can be made self-supporting. However, it is important to follow the rules described in Chapter **9**(always in the notes below for individual subsections).

ProfiPure 100, 200, 300 **ProfiPure 400, 500**

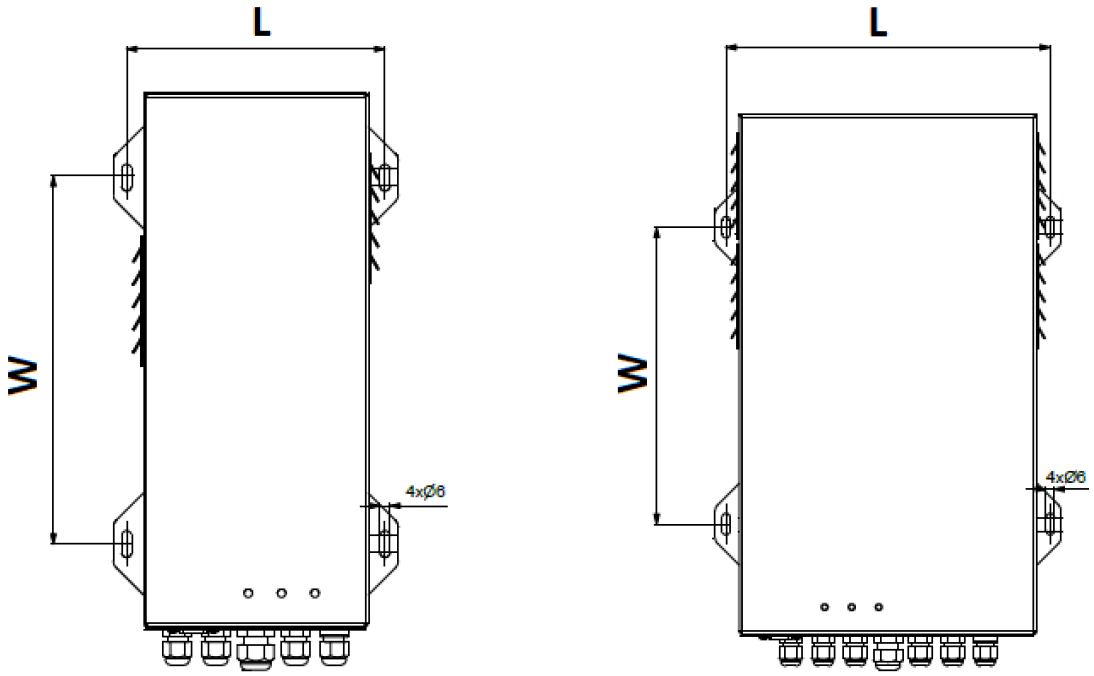


Figure 7: Dimensions for drilling the mounting holes of the UV switchboard (left for ProfiPure 100, 200, 300 and right for ProfiPure 400, 500.

Table 5: Dimensions for mounting switch cabinets (for individual models).

ProfiPure		100	200	300	400	500
W x L	mm	220 x 155	220 x 155	220 x 155	220x240	220x240

Before installing the device, check all supplied product parts:

1 - UV switchboard with (reactor temperature sensor **a,** PE conductor **b**, HV conductors to UV lamp with terminals **c,** power cable with terminal **d**)
2 - UV reactor with inserted quartz glass.
3 - UV lamp with USB key (packed in a box)

Figure 8: Package contents.

8. Methods of control and signaling of medium-pressure UVM systems

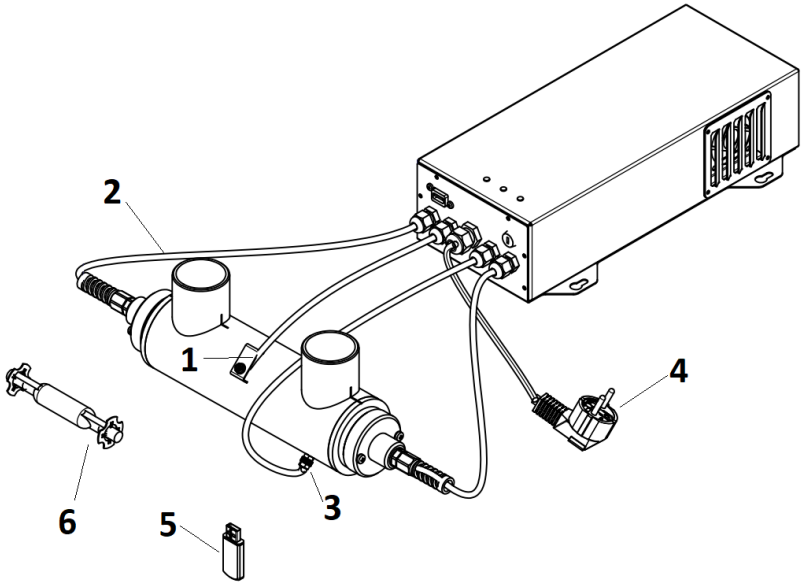
⚠ WARNING	
⚠	**It is always necessary to guarantee the water flow through the reactor. This can be done by feeding a water flow signal to an external contactor or other switching device. For more details, see chapter 9.2.**

The UV system switchboard has operation and error signaling. Remote control is implemented in the form of an activation signal supplied to an external contactor or other switching device. The switchboard does not have data communication. A more detailed description is given in chapter **9.**

9. Electrical installation

⚠ ATTENTION	
⚠	Please read this chapter carefully before operating the equipment. There is a risk of serious injury if you do not pay attention to this chapter.

ProfiPure device consists of several cables. These are explained in more detail in the following chapters.



1 – Cable to the temperature sensor together with the reactor temperature sensor itself
2 – Cables to the UV lamp with a connection terminal
3 – Ground screw together with ground cable
4 – Power cable
5 – USB key
6 – UV lamp

Figure 9: Illustrative drawing of the UV system assembly.

For proper operation of the device, bring the following wires and signals to the installation location of the switchboard:

9.1. Main power supply

ProfiPure device is equipped with a power cord (1). Connect the power cord to the socket (2), which will be switched based on the activation signal (water flowing). The recommended fuse protection for the supply wire in the higher-level switchboard is given in table 1 (**Recommended fuse**). The power cord (1) can also be connected to the superior distribution system in the terminal blocks by cutting the end of the power cord. The phase wire is then marked brown, the neutral wire blue and the ground wire green-yellow.

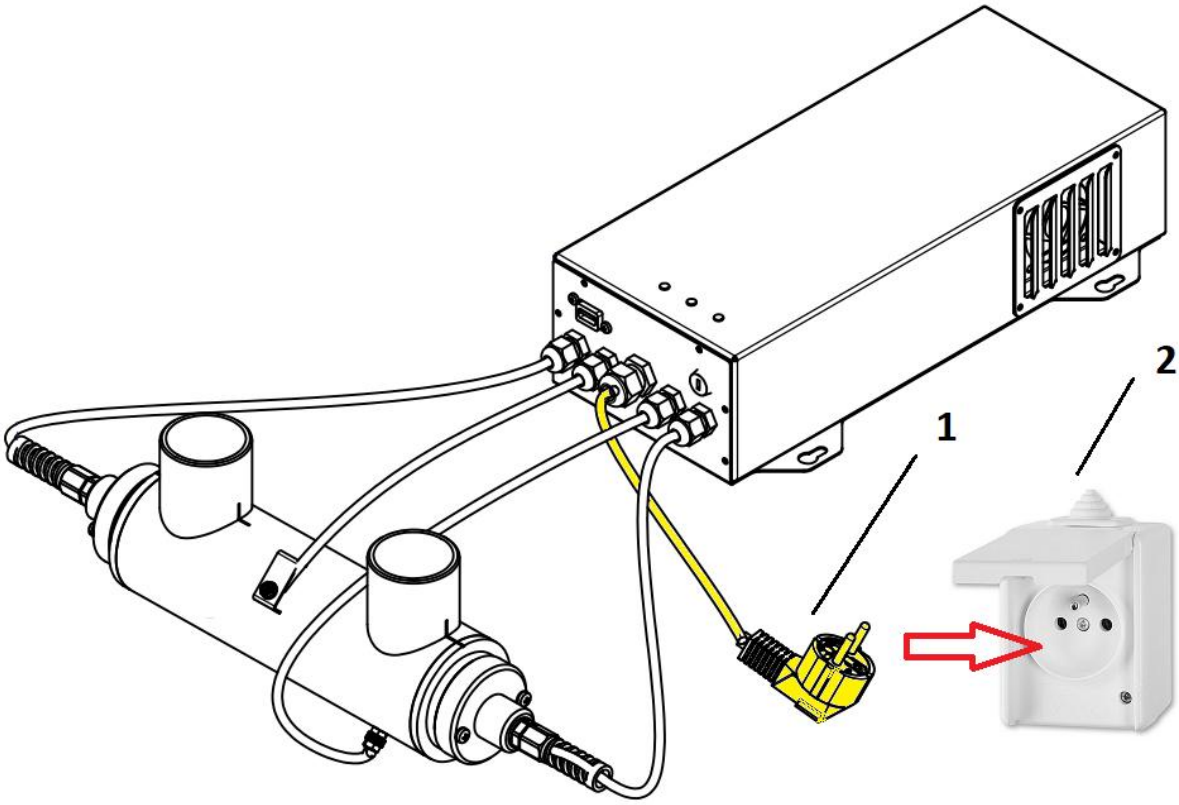


Figure 10: Power supply.

9.2. External signal to turn on the device (usually from a higher-level control system).

⚠ DANGER	
⚠	**The device must not be switched on by direct connection to the circulation pumps, because in such a situation there is often no water flow through the reactor (the water is usually discharged directly into the waste). Incorrect connection may cause the reactor to overheat and possible damage to the pipes!**

⚠ WARNING	
⚠	**The UV system must be enabled by applying the supply voltage** **Operating the device without switching the supply is not recommended. In this mode, the reactor and UV lamp may be damaged in the event of zero water flow! Frequent switching on/off of the UV system results in a rapid reduction in the life of the UV lamp!** **Always test the functionality of the automatic switching on and off of the UV system. When the circulation pumps are switched off and the water flow stops, the UV lamp must be switched off!**

The device must only work when water circulation is ensured. For this purpose, the customer must include a socket in the installation that is switched by a signal from the customer. To start operation, it is necessary to switch on the socket supply, whose switching voltage is 230 VAC. An example of correct connection can be seen in Figure 11. The 230 VAC voltage is supplied to the socket, which is switched by the control system, which in this case consists of a relay (KA50) and a control unit. The control unit switches the relay coil (marked KA50) when water flow is guaranteed. By switching the coil or contact, the phase voltage is supplied to the socket. Thanks to the supplied voltage, the socket is switched, and thus the UV system starts operating. This state is signaled by the POWER indicator light. For connection, use a wire with a cross-section of 3 x 1.5 mm^2. The voltage of the contactor coil, switching the supply voltage, can be selected according to the customer's needs. The contactor contact must withstand the current specified in Table 6.

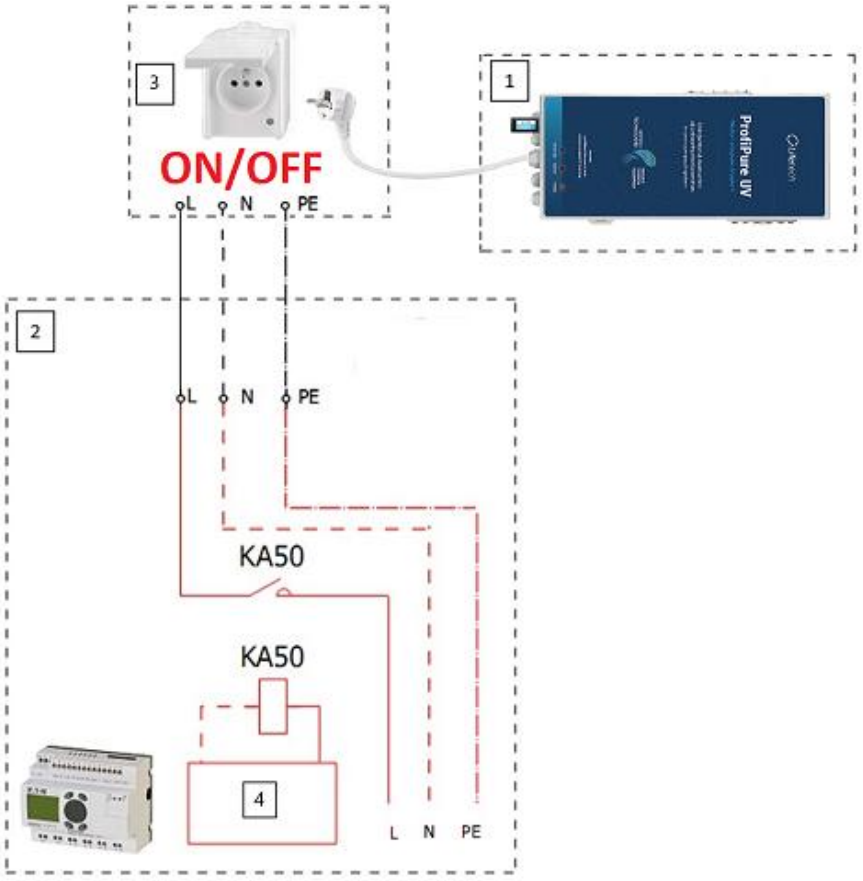
⚠ WARNING	
⚠	The contact of the KA50 contactor must be designed to withstand 10 times the rated current of the device due to inductive load.

Table 6: Design of minimum contactor contact current value.

UV system model	Minimum recommended contactor contact value
ProfiPure 100, 200, 300	16 A
ProfiPure 400	25 A
ProfiPure 500	50 A

Lifetech s.r.o.
Kosinova 2116/19
612 00 Brno
Czech Republic

www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

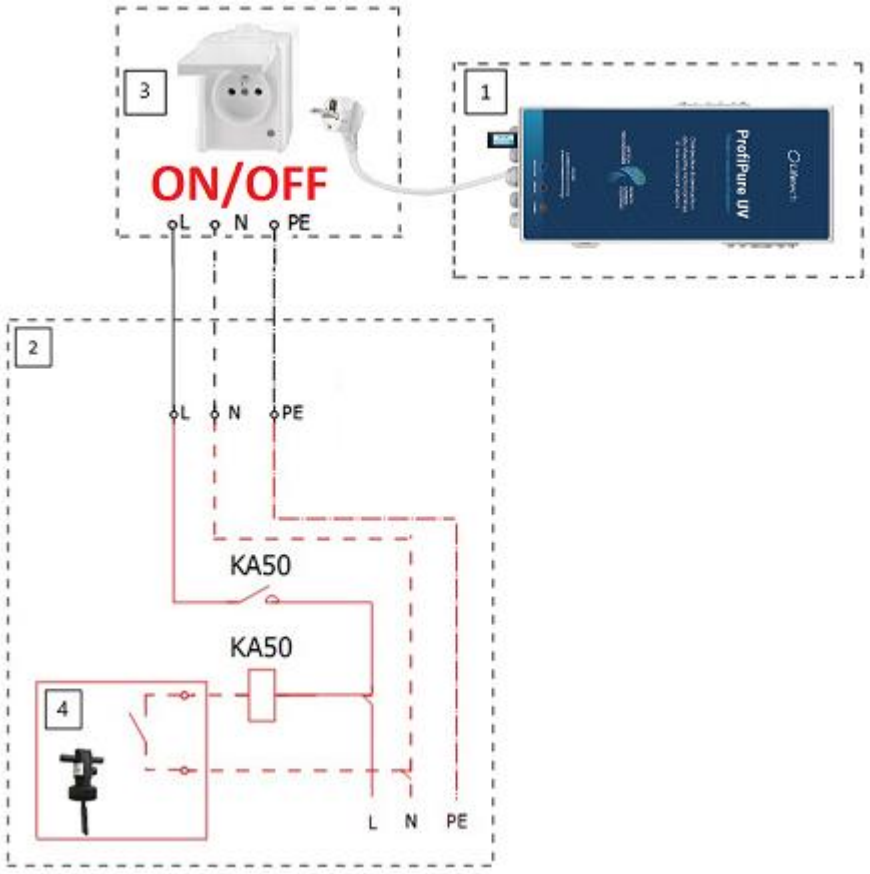


1 – Lifetech UV switchboard
2 – Control system (customer)
3 – Switched socket (customer)
4 – Control unit (customer)

Figure 11: Example of connecting an external signal to enable operation through a socket.

⚠ WARNING	
⚠	**The flow switch must be placed at the outlet of the UV reactor (after the UV reactor). Otherwise, incorrect measurements may occur.** **Place the flow switch on a free pipe, where there will be no valve or elbow in front of and behind the switch at a distance of at least 50 cm. The movable paddle of the flow switch must be at a minimum depth of 1/3 of the pipe diameter (D) to prevent accidental switching on/off of the device.**

Use the connection option described above if an activation signal from the control system is available. Otherwise, the second connection option can be used, which consists in using a flow switch. The connection diagram is very similar and again involves connecting the mains voltage to the socket (UV system supply). The flow switch must always be oriented in the direction of water flow (usually marked with an arrow on the switch).



1 – Lifetech UV switchboard
2 – Control system (customer)
3 – Switched socket (customer)
4 – Flow switch (customer)

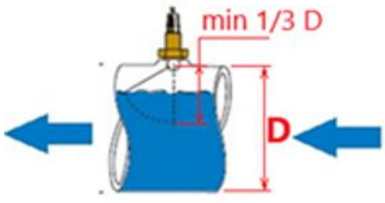


Figure 12: Example of connecting an external signal to turn on the device in the form of a flow switch**.**

9.3. Connecting silicone HV wires between UV switchboard and UV reactor

⚠ WARNING	
⚠	**Due to high voltage, always route all silicone HV conductors as far away as possible from all metal and grounded parts in their vicinity!** **Frequent switching on and off significantly shortens the service life of the discharge lamps! HV cables must not be wound into loops. When connecting, ensure good contact between the UV discharge lamp and the connector on both sides!**

The UV system cabinet is always shipped with untied cables. Cut the cable ties using pliers to make it possible to manipulate the cables. Select the cables for connecting the UV lamps (silicone HV wires) from the cable bundle, which are equipped with a black end for connecting the UV lamp, as illustrated in Figure 13. Insert the UV lamp into the reactor body, as shown in Figure 13so that the UV lamp wires are approximately the same length at both ends, 1-2 cm. Connect the silicone power cables for connecting the UV lamp to the UV lamp cables **(8)** by simply inserting the pins into the connectors **(9)** that are part of the plastic caps of the power cables. The situation is illustrated in Figure 14. Screw the cable caps to the rings on the UV reactor with screws, similar to what is shown in Figure 13. The polarity of the wires does not matter. Correct wiring is then illustrated in Figures 15, 16and 17.

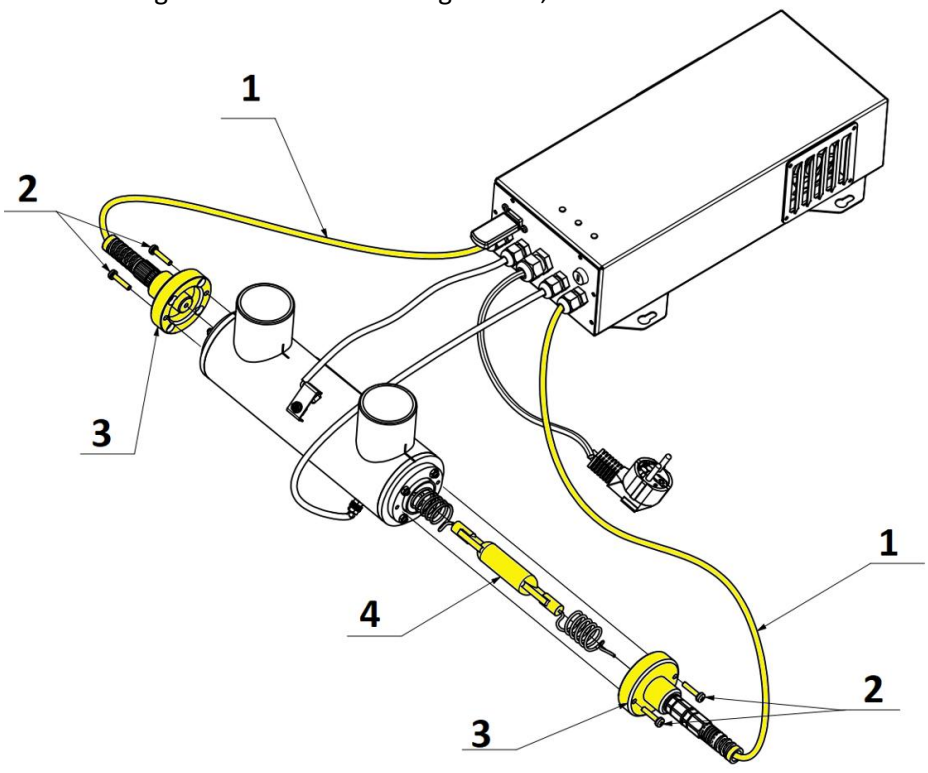


Figure 13: Installation of the UV lamp into the reactor.

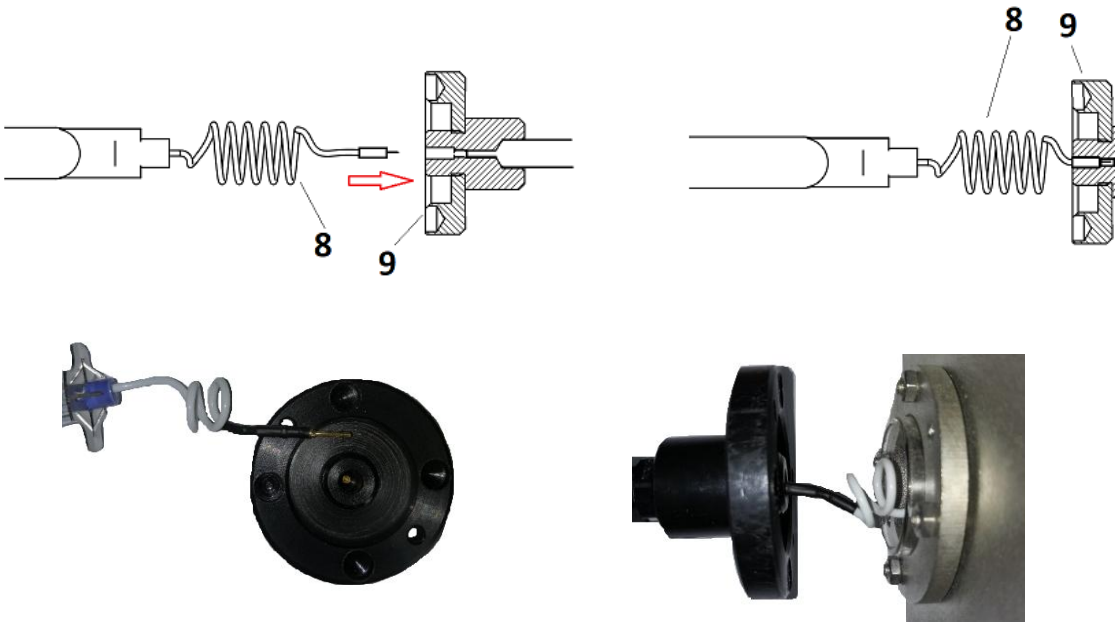


Figure 14: Illustration of connecting HV conductors with UV lamp cables.

Figure 15: Demonstration of correct cable routing.

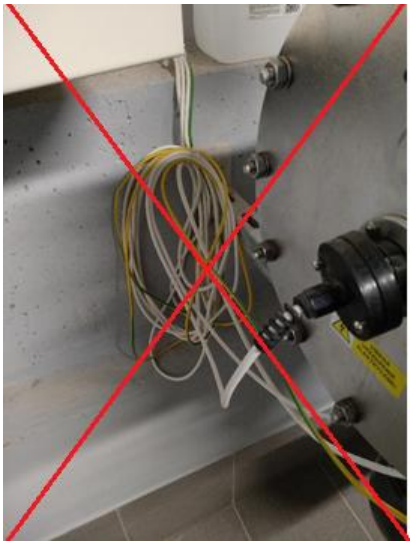
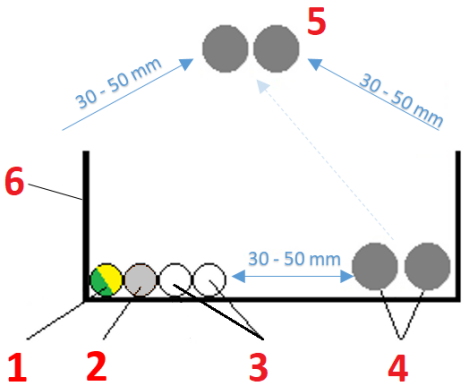


Figure 16: An example of poor wiring.



1 - PE Protective conductor

2 - Cable to temperature sensor

3 - Other cables (electrical supply, signal, control)

4 - HV cables to the discharge lamp (placed in a plastic trough)

5 - HV cables to the discharge lamp (location at a metal trough at a distance of 30 to 50 mm from metal structures)

6 - Plastic gutter

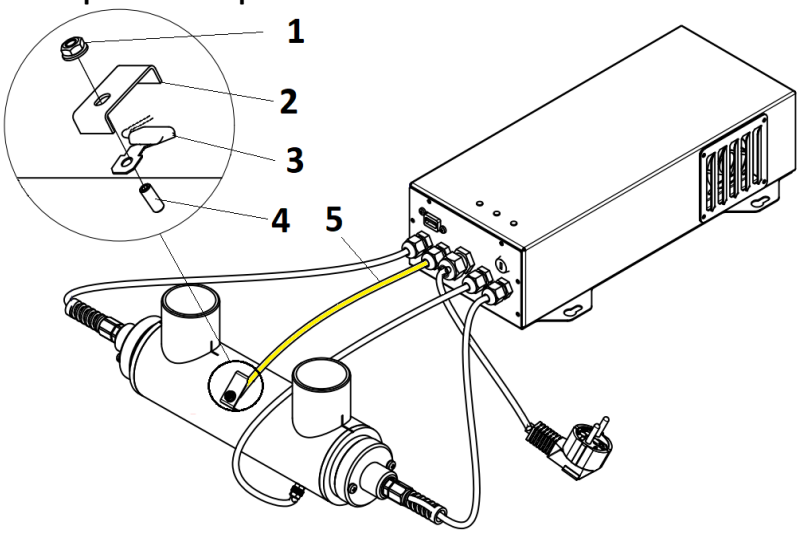
Figure 17: Example of correct cable routing in the rail.

9.4. Connecting the UV reactor temperature sensor wire

⚠ WARNING	
⚠	**The polarity of the connection does not matter. It is recommended to place the temperature sensor wiring in a plastic or metal conduit so that it is as far away from the high voltage power conductors (silicone cables for the UV lamp) as possible. If the distance from the high voltage conductors is not maintained, the system will not function properly.**

Select the cable for the temperature sensor (5) from the cable bundle. From the prepared place for attaching the temperature sensor, screw the nut with the washer (1) and remove the metal bracket (2). Thread the temperature sensor (3) with the eye onto the mounting point (4) and close it with the metal bracket. Then carefully tighten it with the nut so as not to damage the temperature sensor. The temperature sensor located on the UV reactor body must always be oriented so that the cable is oriented upwards, similar to Figure 18The UV lamp must always be in a horizontal position!

The overheating temperature is 65 °C, the UV lamp is switched on again when the temperature drops to 40 °C.



1 – Nut
2 – Metal holder
3 – Temperature sensor
4 – Mounting point
5 – Temperature sensor cable

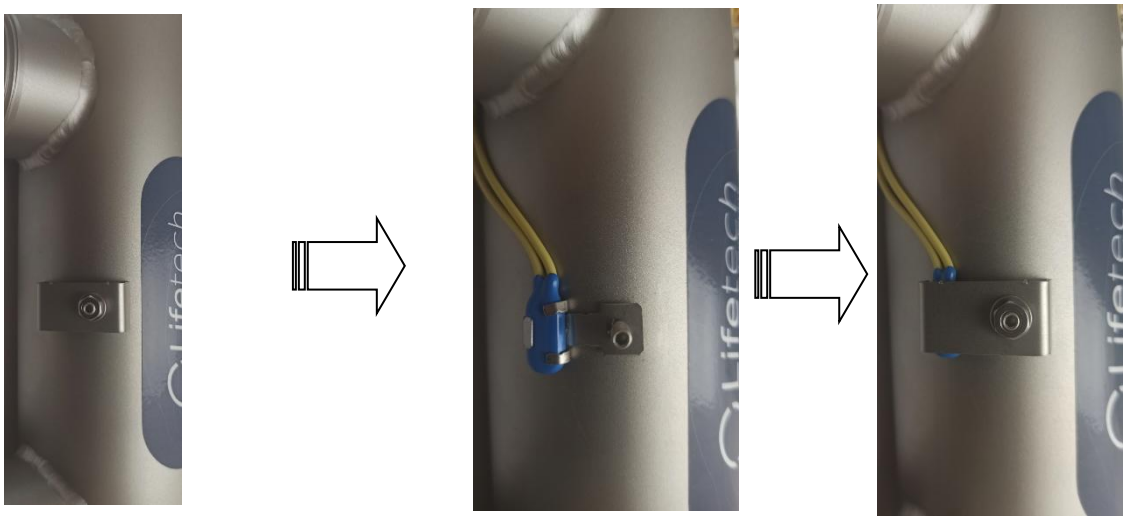
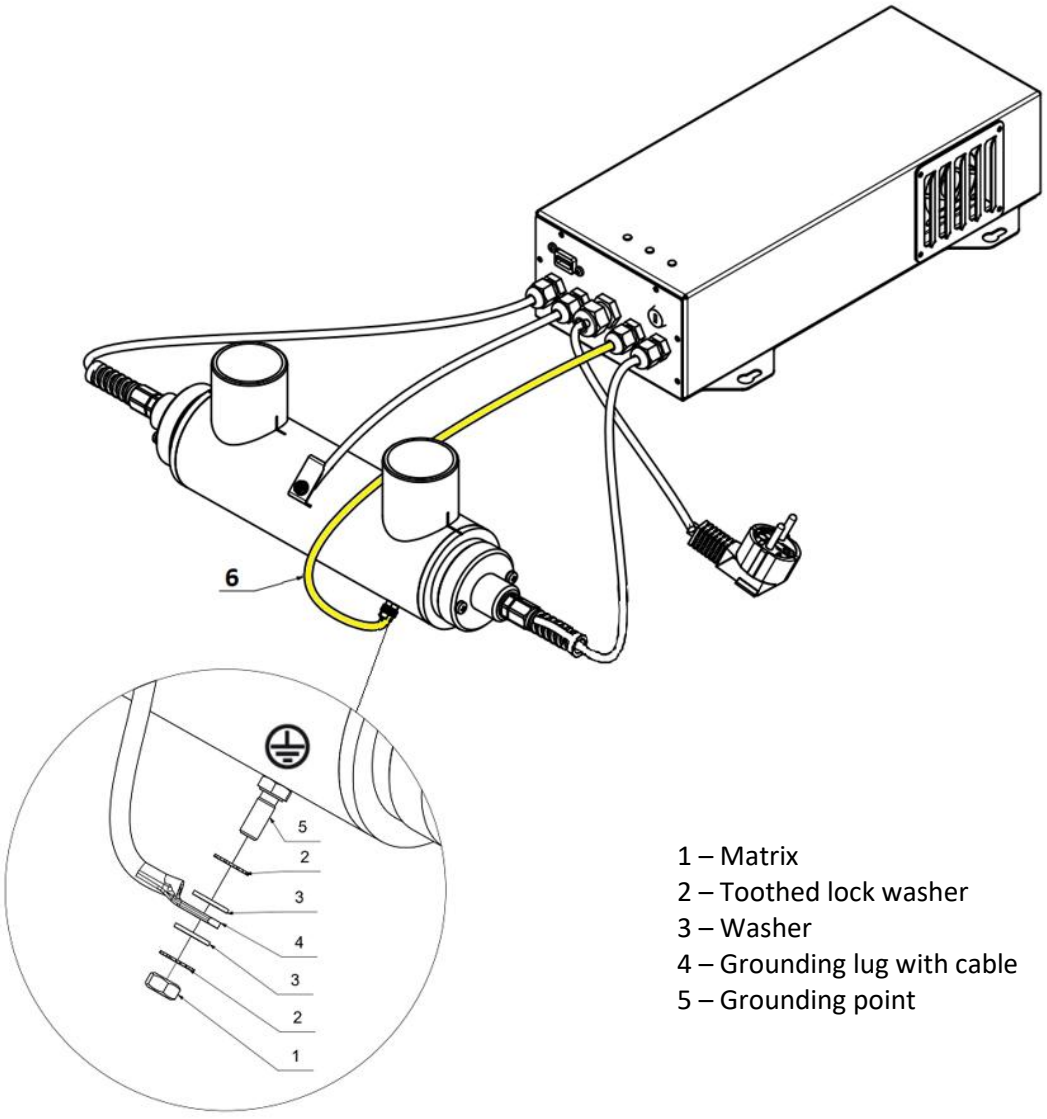


Figure 18: Connection of the temperature sensor on the UV reactor.

9.5. Connecting the UV reactor to the UV switchboard with a PE conductor

⚠ WARNING	
⚠	**It is recommended to place the grounding cable wiring in a plastic or metal conduit so that it is as far away from the high voltage power conductors (silicone cables for UV lamps) as possible. If possible, we recommend shortening the cable to the required distance to the reactor. In this case, it is not advisable to leave the wiring at the length it is supplied with.**

The UV system cabinet is always shipped with the cables untied. Use pliers to cut the cable ties to allow handling of the cables. Remove the grounding cable (6) from the cable bundle. Connect the grounding cable to the grounding screw on the UV reactor. Insert the eye of the grounding cable between the two washers (3) located there and tighten them firmly with the nut (1) to achieve a perfectly electrically conductive connection between the grounding cable and the UV reactor. The situation is illustrated in Figure 19.



1 – Matrix
2 – Toothed lock washer
3 – Washer
4 – Grounding lug with cable
5 – Grounding point

Figure 19: Connecting the ground wire.

9.6. USB key

⚠ WARNING	
⚠	**The USB key can be damaged by moisture, mechanical stress, or static electricity. Never insert it into another device (e.g. a computer) and do not insert other USB devices into the UV system. Damage to the device or USB key in this way is not covered by the warranty. The UV system cannot be operated without the USB key inserted!** **If the pairing process (loading data for operation for a given UV lamp) of a new USB key is interrupted, it may be irreversibly damaged, therefore the USB key must not be pulled out during the process and the power supply to the UV cabinet must not fail or be interrupted!**

Insert the new USB key (1), which was delivered with the new UV lamp, into the USB connector (2) located on the device. Switch on the device with the new USB key. If the process of reading data from the new USB key is interrupted, the USB key may be irreparably damaged. This is why the USB key must not be pulled out, nor must the power supply to the UV cabinet be disconnected or interrupted, while reading data! It is not possible to use the UV system without the USB key inserted. The USB key may also be damaged by moisture, mechanical stress or static electricity.

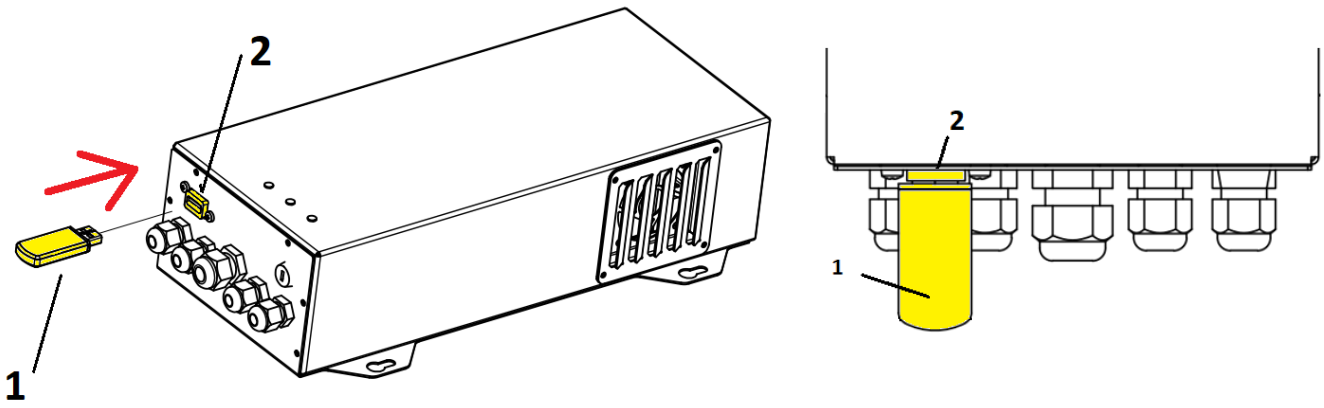


Figure 20: Connecting a USB key.

10. Meaning of the LED indicators

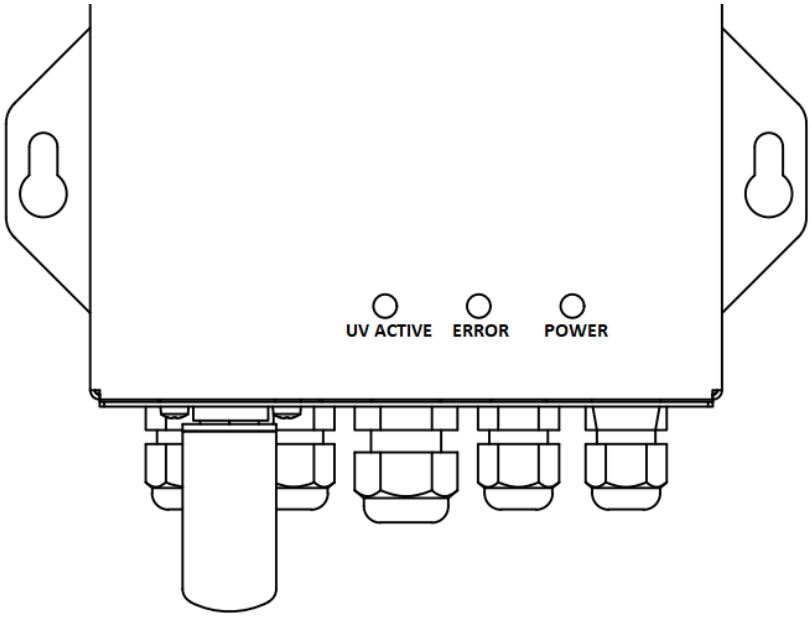


Figure 21: Front LED panel.

Operating states are indicated by three LEDs (Blue, Red, Yellow) located on the top of the UV system cabinet.

POWER (yellow) – indicator light indicating that the device is powered. The LED lights continuously as long as the device is powered. This LED also indicates that the activation signal has been correctly applied.

UV ACTIVE (blue) – indicator light indicating UV system operation. It can be in the following states:

- **The LED is on continuously** – the UV lamp is in operation (lit).

- **The LED flashes with a period of 1 second (1 second on and 1 second off)** – the device is in the cooling state. This state is always before the UV lamp is turned on and lasts for 5 minutes. This state can also occur in the event of overheating of the reactor or switchboard or when the device is turned off and then on again.

- **The LED flashes with a period of 250 ms (250 ms on and 250 ms off)** – the device is in the UV lamp ignition state. This state can last a maximum of 1 minute. If ignition does not occur during this time, the device will attempt 3 ignition attempts and if ignition still does not occur, the device will remain in error.

ERROR (red) - indicator light indicating a device failure. It can be in the following states:

- **LED is on continuously** – There is a fault with the UV lamp. The UV system has failed to ignite the lamp three times in a row. In such a case, we recommend disconnecting the device from the power supply and reconnecting it. If the UV lamp still does not ignite, we recommend replacing it.

- **LED is on continuously** – Reactor or switchgear system has overheated. The UV system has disabled the UV lamp due to reactor or switchgear system overheating. Check the switchgear and reactor temperatures. Verify that the UV system is switching on correctly, only when water is flowing through the reactor. Reactivate the UV system and verify that the UV lamp has ignited.
- **LED flashes with a period of 500 ms (500 ms on and 500 ms off)** – The device warns the customer about the imminent replacement of the UV lamp. This is signaled 720 hours before the maximum hours expire. We recommend ordering a new UV lamp with a USB key as soon as possible.

ERROR (red) + UV ACTIVE (blue) - Red and blue LED flashes alternately. The USB key itself is probably damaged. Remove and reinsert the USB key. If the fault is not resolved, order a new UV lamp together with the USB key.

ERROR (red) flashes + POWER (yellow) lights up - even after switching the power on and off again. The device signals that the maximum operating hours of the UV lamp have been reached. Replace the UV lamp with the USB key.

Lifetech s.r.o.
Kosinova 2116/19
612 00 Brno
Czech Republic

www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

11. UV system commissioning

⚠ WARNING	
⚠	**Before commissioning the system, verify that all steps described in chapter 9. Without the above steps, it is not possible to commission the device! The individual steps for starting the UV system are described below.**

- Gradually fill the UV reactor and close the bypass if necessary. Valves open and close slowly to eliminate pressure shocks, especially on quartz glass UV lamps.
- Visually check to make sure there is no water leakage from anywhere in the UV reactor body.
- Enable the UV system to operate via an activation signal. A correctly applied activation signal is signaled by the POWER light.

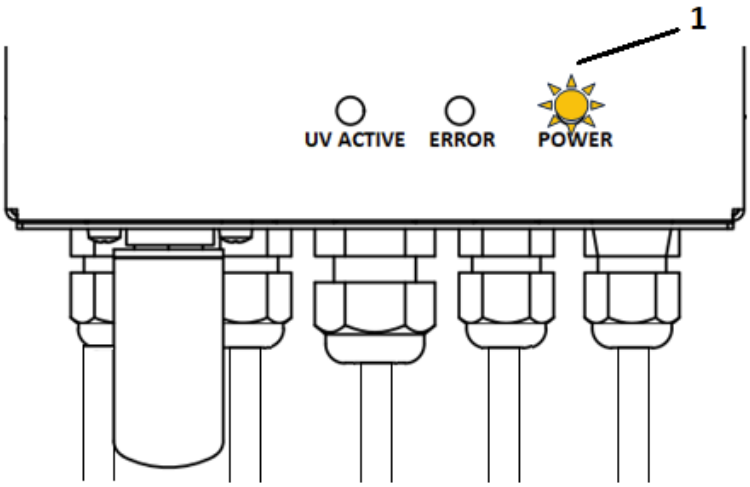


Figure 22: Applying the activation signal.

- Verify that the device ignites the UV lamp via the UV ACTIVE LED (the diode is flashing). The device may be in a cooling state. Therefore, pay more attention to the flashing frequency of diodes. In this case, wait for the cooling state to end (maximum 5 minutes).

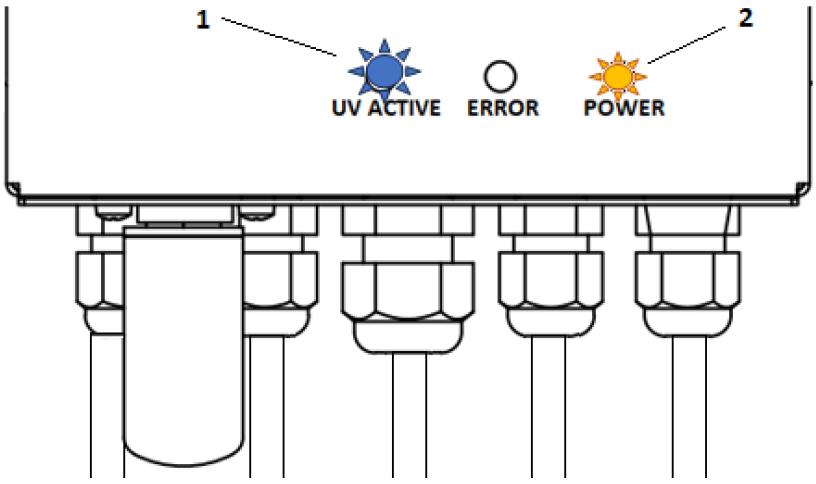


Figure 23: Ignition/cooling status.

- Verify that the UV system has successfully ignited the UV lamp and is indicating operational status via the UV ACTIVE LED.

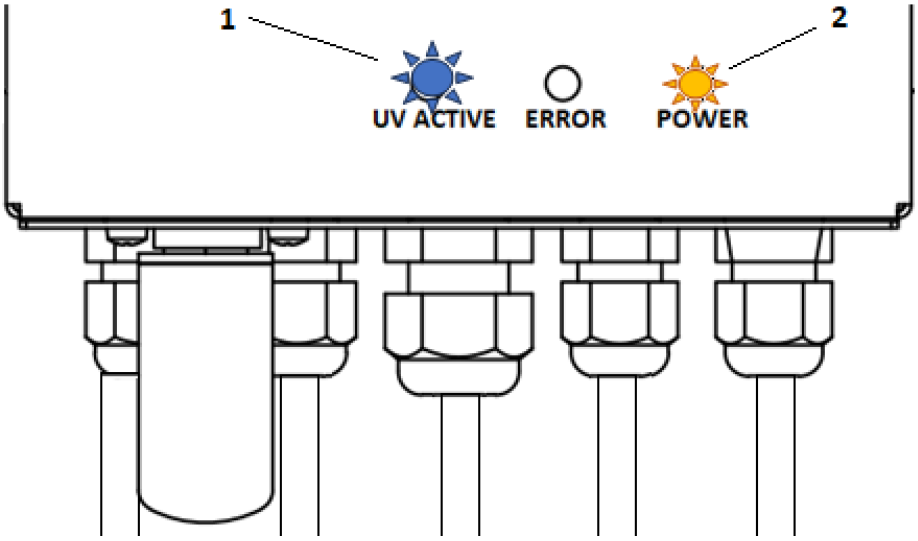


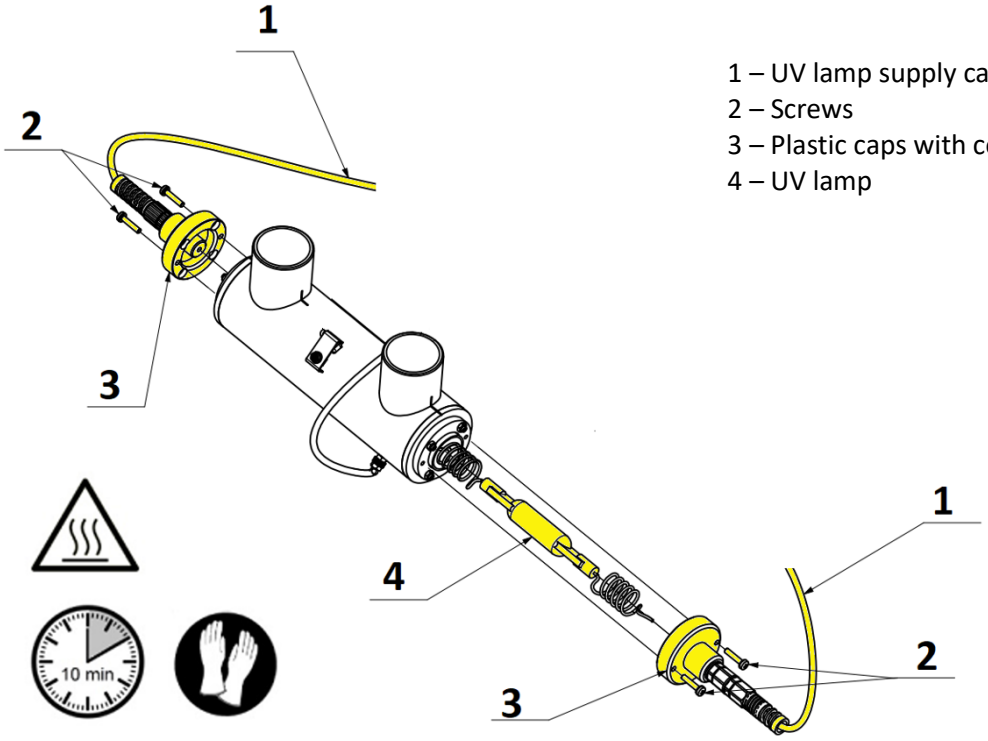
Figure 24: UV lamp operation indication.

12. Service of individual parts of the device

12.1. Replacing the UV lamp

⚠ WARNING	
⚠	**When handling the UV lamp, wear clean cotton gloves. Do not touch its surface with bare hands! If the surface is dirty, clean it with alcohol and a clean cotton cloth or paper cotton. When replacing the lamp, always pair a new USB key according to chapter 12.2**

Deactivate the UV system operation with the activation signal and disconnect the main power supply. Wait at least 10 minutes for the UV lamp to cool down. Then proceed as shown in Figure 25. Loosen the two screws (2) securing the plastic covers of the UV lamp (3) with a PH2 cross screwdriver and pull them away from the UV reactor on both sides. Carefully remove the UV lamp (4) by pulling it out of the UV reactor glass. Insert the new UV lamp into the reactor body as shown in the figure 25so that there are approximately the same length of UV lamp wires at both ends, 1-2 cm. Connect the power cables with caps (9) to the UV lamp cables (8) by simply inserting the pins into the connector, which are part of the plastic caps of the power cables. The connection procedure is shown in the figure 25caps (3) to the UV reactor body with screws (2). The polarity of the wires does not matter.



1 – UV lamp supply cables
2 – Screws
3 – Plastic caps with connector
4 – UV lamp

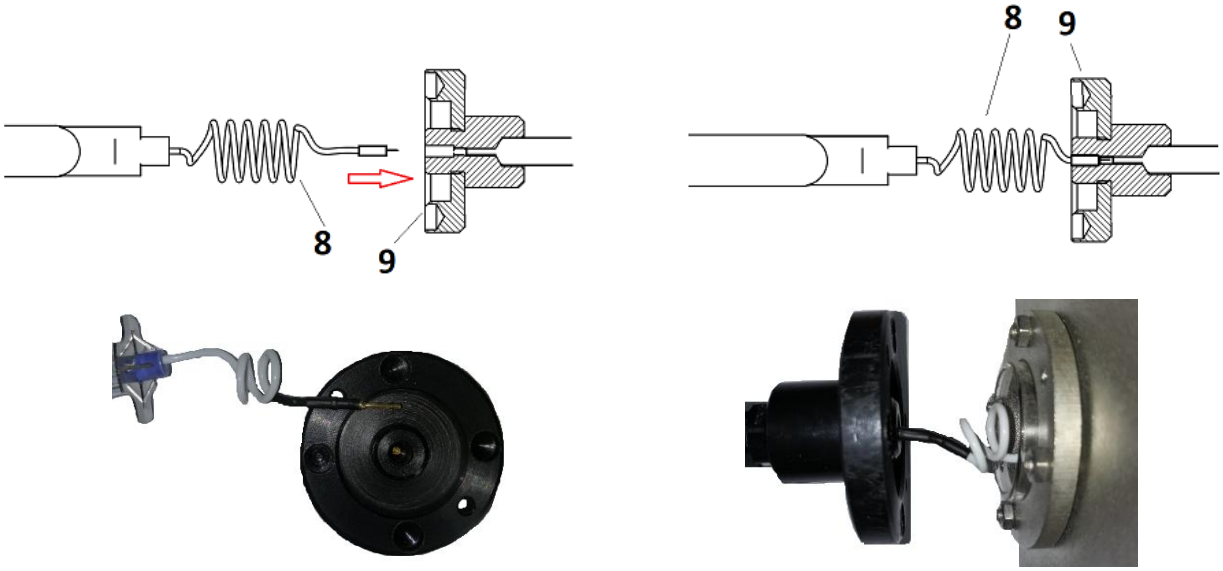


Figure 25: Replacing the UV lamp.

12.2. Pairing a new UV lamp with the UV system control electronics

⚠ WARNING	
⚠	**If the process of loading data for operation for a given UV lamp from a new USB key is interrupted, it may be irreversibly damaged, therefore the USB key must not be pulled out during this process and the power supply to the UV cabinet must not fail or be interrupted!** **The USB key can be damaged by moisture, mechanical stress, or static electricity. Never insert it into another device (e.g. a computer) and do not insert another USB into the UV system. Damage to the device or USB key in this way is not covered by the warranty.**

Deactivate the UV system operation with the activation signal and disconnect the main power supply. Pull out the old USB key and insert the new USB key into the same position as shown in Figure 26.

Note: If UV the lamp is replaced, but the new USB key is not read and therefore the optimized operating data for the new lamps are not read, the UV system will consider it as old. An incorrectly read USB key is signaled by the flashing of UV ACTIVE together with ERROR.
Frequent switching on and off significantly shortens the life of the lamp. If the lamp is no longer working, this is indicated on the LED display by the red *ERROR indicator light*.
We also recommend replacing the UV lamp if the quality of the treated water is no longer sufficient due to reduced UV radiation intensity, especially towards the end of the UV lamp's service life. Discharge lamps (for example, when the alarm clock is reached). It is not possible to operate the UV system without the USB key inserted.

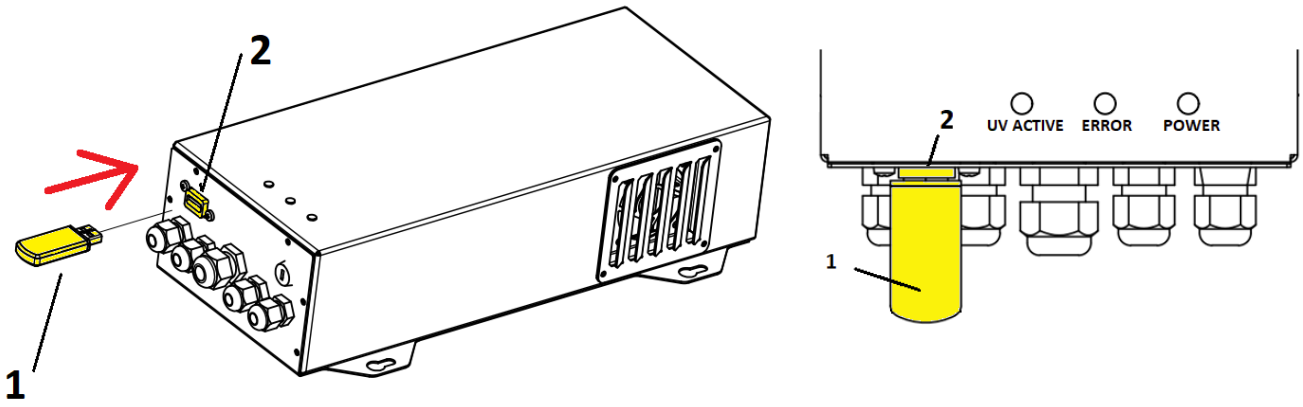


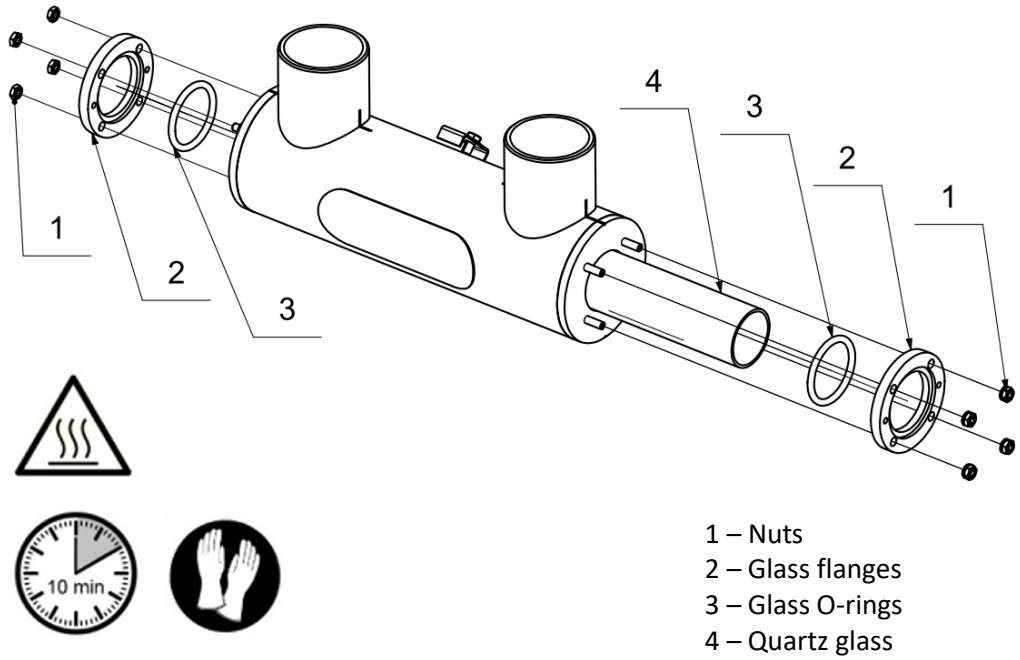
Figure 26: Inserting a new USB key.

12.3. Replacing the quartz tube of the UV lamp (or its mechanical cleaning and replacement of the quartz glass O-rings)

⚠ WARNING	
⚠	**Mechanically clean the quartz glass regularly (chapter 15) depending on the water quality and the location of the device or replace it with a new one. If you notice significant contamination, we recommend shortening this interval.** **Use citric acid and a cotton cloth to clean the glass.** **Protect the quartz glass from scratches! Rinse the quartz glass carefully from the outside to remove any cleaning agent residue.**

Deactivate the UV system operation with the activation signal and disconnect the main power supply. Wait at least 10 minutes for the UV lamp to cool down. Stop the water flow and ensure that the water is completely drained from the UV reactor. Remove the UV lamp according to the procedure described in chapter **12.1**.
Proceed as shown in Figure 27, loosen the nuts (1) holding the stainless steel flanges of the UV lamp glass (2) on both sides of the UV reactor. It is advisable to loosen them symmetrically to avoid mechanical stress in the lamp glass on its diameter. Remove the stainless steel flanges and remove the glass O-rings (3) located underneath it. Remove the quartz glass (4) from the UV reactor by pulling it to the side.

Insert the new quartz glass into the UV reactor. Put new O-rings on the new glass and after centering it in the UV reactor, replace the stainless steel flanges. Tighten the flange nuts symmetrically with a No. 7 open-end wrench with a maximum tightening torque of 4 Nm. Reinsert the UV lamp according to the procedure described in chapter **12.1**(Replacing the UV lamp) and put the UV system into operation according to chapter **11**(Commissioning the UV system).



1 – Nuts
2 – Glass flanges
3 – Glass O-rings
4 – Quartz glass

Figure 27: Replacing the UV lamp quartz glass or replacing the quartz glass O-rings.

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Kosinova 2116/19
612 00 Brno
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12.4. Checking or replacing the air filters of the switchboard

- Check or replace the filter periodically according to chapter 15 . In case of dusty environment, shorten this interval. The number of installed filters is given in Table 7 .

- The cabinet filter (3) is located under the cover grille (2), which is attached using 4 pcs of Allen screws (1) for wrench number 2.

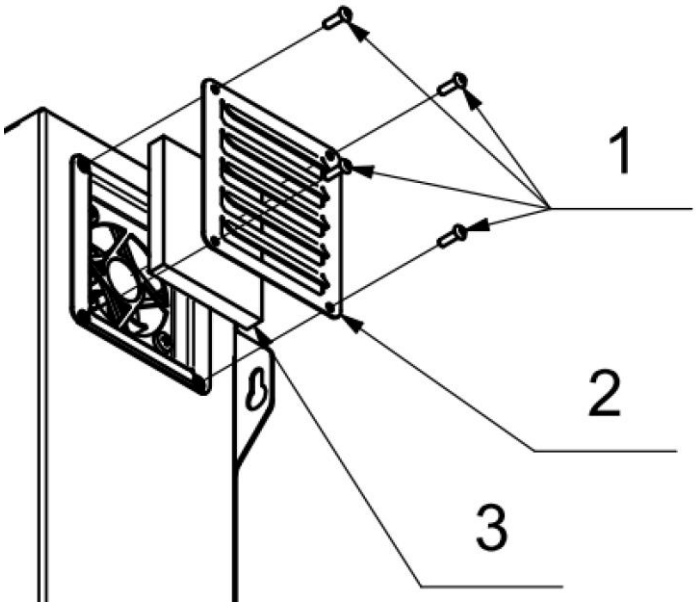

***Figure* 28:** Replacing the cabinet fan air filter

Table 7: Number of cabinet fan filters for each model

UV system model	Number of filters
ProfiPure 100, 200, 300	2
ProfiPure 400, 500	4

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Kosinova 2116/19
612 00 Brno
Czech Republic

www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

13. Long-term shutdown of equipment or winterization

Remove the UV lamp and electronics for the winter (in places where the temperature is below 0 °C there is a risk of condensation and freezing of the water). Drain the water from the reactor. Clean the reactor of deposits. Store the dismantled UV lamp and electronics in a frost-free place.

To restart the lamp after winter storage or long-term shutdown, proceed as follows. Remove the quartz glass of the discharge tube according to chapter 12.3and check that the glass is not mechanically damaged. Clean and reinsert the quartz glass into the reactor. Slowly fill the reactor with water and check the reactor for leaks. Insert the discharge lamp into the reactor according to chapter 12.1. If the electronics have been removed, re-install. Allow water flow and switch on the UV switchboard electronics. Check the function of the discharge lamp and the correct setting of the UV system.

14. The most common problems and how to fix them

14.1. The UV lamp does not light up even after a long time, the control panel signals UV FAULT

Check the horizontal position of the reactor installation with water inlet and outlet from the top. The discharge tube must be placed in a horizontal position.

Check the electrical connection of the supply wire and the activation signal itself. Verify that signaling occurs when activated.

Check the electrical connection of the HV wires to the UV lamp, their possible mechanical damage or high voltage insulation breakdown, and the proper connection of the lamp with the HV wires in the plastic black housing according to Figure 25.

Visually check whether there is any moisture or water in the quartz glass of the lamp, whether the lamp is not mechanically damaged and whether it is placed in an ideal horizontal position.

Check the mains voltage

If the problem persists, verify that the UV lamp is enabled again (after cooling is complete and the activation signal is applied) via the LED signaling and that the reactor or the switchboard is not overheated.

If the UV lamp still does not light up, replace the UV lamp according to chapter 12.1and insert a new USB key according to chapter 12.2.

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Kosinova 2116/19
612 00 Brno
Czech Republic
www.lifetechozone.com
sales@lifetechozone.com
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14.2. Water is leaking from the plastic covers of the UV lamp glass...

⚠WARNING	
⚠	**If a UV lamp has been submerged in water, it may be irreversibly damaged or provide a lower level of UV intensity. Depending on the extent of the damage, a decision must be made as to whether it should continue to be operated.**

Remove the lamp according to chapter 12.1(Replacing the UV lamp) and determine the extent of damage. In case of re-use of the UV lamp, it is necessary to thoroughly clean/degrease the UV lamp in a suitable way and then verify its functionality in the device. If the UV lamp does not light up, replace it.
Visually inspect the quartz glass of the UV lamp, especially for hairline cracks at its ends. If mechanical damage is found, replace the quartz glass together with the O-rings according to chapter 12.3(Replacing the quartz tube of the UV lamp).

14.3. ERROR (red LED) flashing + POWER (yellow LED) lights up

- Switch the UV cabinet power supply off and on. If the system signals after switching the power supply off and on ERROR (red LED) flashes + POWER (yellow LED) lights up (the lamp has exceeded the maximum operating hours)
- Replace the lamp with the USB key

14.4. Most common installation errors

- High-voltage cables are coiled into loops along with other cables.

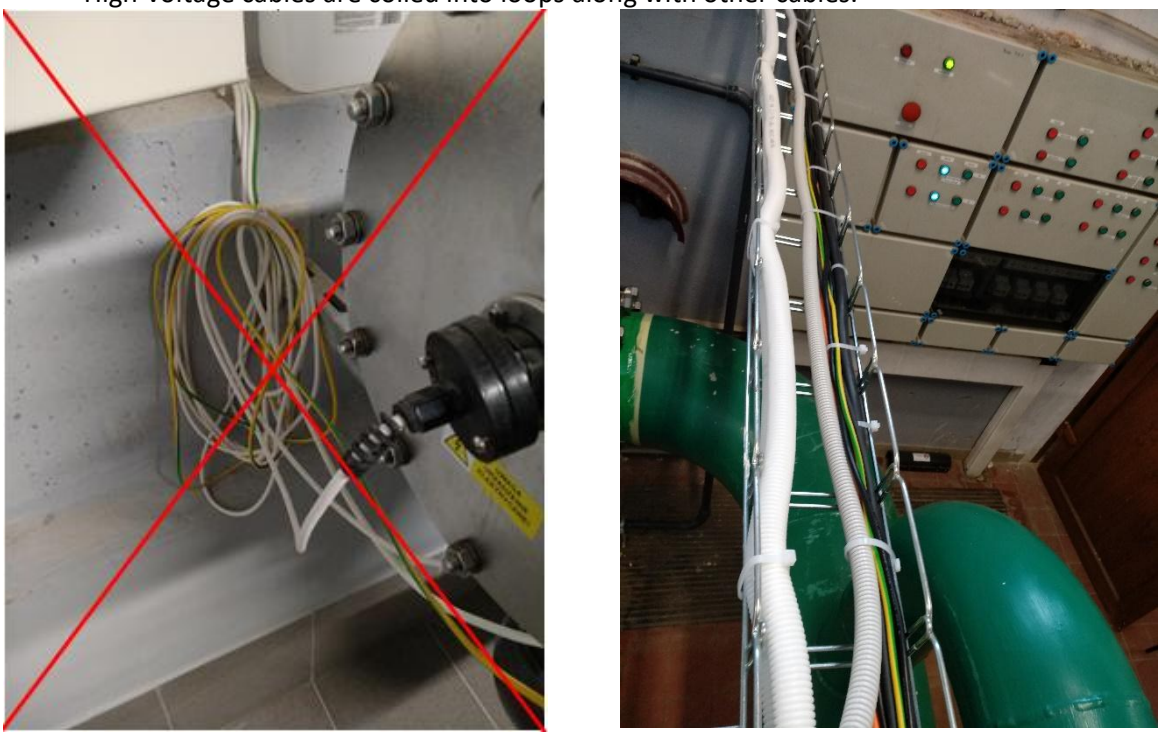

Figure 29: Incorrect (left) and correct (right) cable routing.

- Incorrect operation of the UV device. Frequent switching on and off of the device reduces the life of the lamp. It can also cause overheating of the UV reactor and permanent damage to the lamp due to incorrect switching off of the UV system in the event of non-flowing water.

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Kosinova 2116/19
612 00 Brno
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- Continuous monitoring of the UV reactor is not performed, which can lead to overheating due to insufficient water flow or the formation of air bubbles.
- The lamp is not installed in a horizontal position, which can lead to incorrect starts of the UV lamp and thus permanent damage.
- Too high a dose of flocculant or improper dosing of chemicals causes clogging of the UV reactor and reduces the efficiency of the discharge lamp.

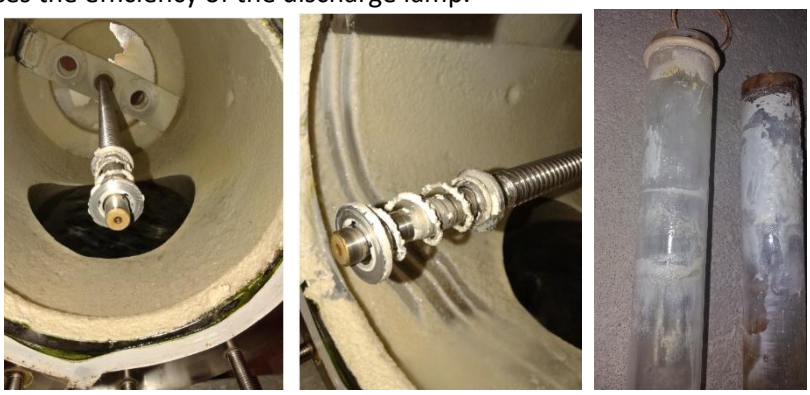

Figure 30: Illustration of the consequences of a high dose of fluctuants.

- High chloride content in water causes chemical corrosion of stainless steel (AISI 316L)

Figure 31: Illustration of the consequences of high chloride content in water.

- Operating the equipment in areas with chemical leaks (chlorine and others) will cause corrosion of the switchboards and all metal components of the pool technology.

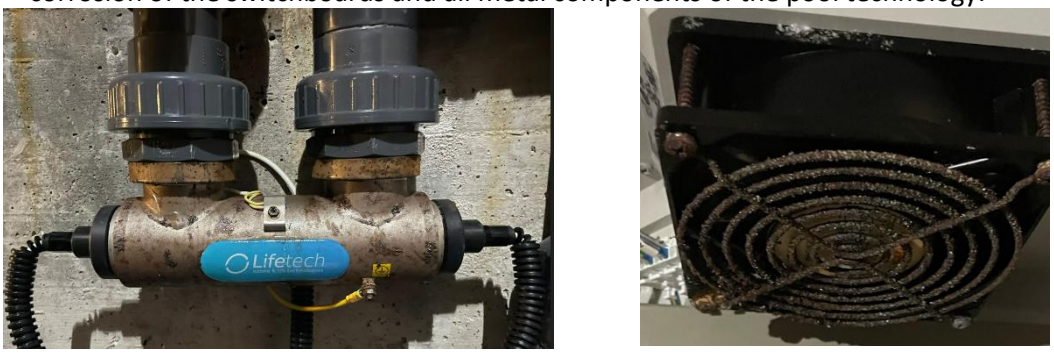

Figure 32: Illustration of the consequences of aggressive pool chemicals in the engine room.

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Kosinova 2116/19
612 00 Brno
Czech Republic

www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

15. Continuous inspection and maintenance

⚠ ATTENTION	
	Failure to follow the regular checks may create a dangerous situation that may endanger the functionality of the equipment, the operator or the service technician. The steps described must be carried out by persons with appropriate qualifications to avoid any potential risks.

Table 8: Recommended ongoing inspection actions with their frequency.

Interval	*Maintenance activity*	*Qualifications*
Every month	• Optical inspection of the device, condition of the wires. • Cleaning the device from dust and deposits. • Reactor venting (overheating). • Visual inspection of the functionality of the UV system and the tightness of the UV reactor. • Checking the glass and sand trap for clogging (only if is it installed).	Trained professional
Every 6 months	• Check or replace the cabinet fan filter. • Checking the automatic shutdown of the UV system when the main circulation pumps are turned off (stopping the water flow in the pipes). • Mechanical cleaning of quartz glass or replacement with new one. • Checking the functionality of the cooling fans of the switchboard cabinet.	Trained professional
Every 12 months	• **Inspection by an authorized service center.** • Replacement of quartz glass O-rings by a service technician.	Service technician
Every 24 months	• Replacement of the UV lamp quartz glass by a service technician (depending on water quality and type of installation). • When replacing the protective quartz glass of the discharge lamp, also replace the quartz glass O-rings.	Service technician
Every 5,000 hours	• Replacing the lamp	Service technician

16. Declaration of conformity

Lifetech sro hereby declares that this product is in compliance with the Low Voltage Directive, EMC Directive, RoHS Directive, Noise Directive and other relevant regulations. The full EU Declaration of Conformity will be provided upon request. Please use the contact details provided in this manual.

Lifetech s.r.o.
Kosinova 2116/19
612 00 Brno
Czech Republic

www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

17. Maintenance sheet

⚠ WARNING	
	**This sheet must be placed at the location of the installed equipment and continuously updated. It is a document of the service life of the reactor and the switchgear system.**

Date	Operation performed	Performed

18. Initial commissioning checklist

⚠ ATTENTION

Use the checklist below for commissioning. Failure to follow the instructions may expose you or the equipment to a dangerous situation.

Place: …… Customer: ……

UV system: …… Serial number: …… ……. .

The following points must be carried out by the service technician commissioning the device.

1. Visual inspection

	Does the unit show any signs of damage? (If yes, please describe the damage and the action requested or taken.)	Yes [ ]	No [ ]

2. UV lamps

	Has the UV lamp been checked?	Yes [ ]	No [ ]

3. Mechanical installation

A)	Has the reactor been installed in the bypass pipe?	Yes [ ]	No [ ]
B)	Is the reactor installed in the correct position?		
C)	Has the tightness of the pipe and reactor connections been checked + the reactor vented?	Yes [ ]	No [ ]
D)	Was the reactor installed in a horizontal position with water inflow and outflow from the top?	Yes [ ]	No [ ]
E)	Was the switchboard installed correctly?	Yes [ ]	No [ ]
F)	Has preparation for electrical installation been carried out?	Yes [ ]	No [ ]

4. Electrical installation

A)	Was the switchboard connected to the mains?	Yes [ ]	No [ ]
B)	Has the connection between the switchboard and the reactor temperature sensor been made?	Yes [ ]	No [ ]
C)	Has the PE conductor been connected to the reactor?	Yes [ ]	No [ ]
D)	Has the UV lamp been installed and inserted into the reactor?	Yes [ ]	No [ ]
E)	Was the USB key inserted into the UV system cabinet?	Yes [ ]	No [ ]
F)	Has the UV lamp been connected?	Yes [ ]	No [ ]

5. Lock / Automatic on and off

A)	Has a flow switch been installed in the pipe and a water flow signal has been supplied from the control system or flow damper?	Yes [ ]	No [ ]
B)	Has a test been performed to automatically turn the UV system on and off when the main pool circulation pumps are turned on and off?	Yes [ ]	No [ ]

6. Flow rate setting

	Has the water flow been adjusted by the system?	Yes [ ]	No [ ]

7. Power on/Setup

A)	Has the UV system been turned on?	Yes [ ]	No [ ]
B)	Has the automatic UV system on and off test been performed?	Yes [ ]	No [ ]

8. Faults and indicators

A)	Are all indicators working correctly?	Yes [ ]	No [ ]
B)	Are all safety devices working properly?	Yes [ ]	No [ ]
C)	Has the reactor been checked during operation to ensure it is not overheating?	Yes [ ]	No [ ]

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Kosinova 2116/19
612 00 Brno
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www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

19. Consumables

The tables in this chapter only list consumables. If you need a more detailed list of spare parts, contact the manufacturer and request a “Spare Parts Catalog” for the device.

Table 9: Consumables list ProfiPure 100, 200, 300.

Item no.	Trade name	periodic replacement after	Number of pieces
999 01 01 01 09_0	Quartz Glass O-Ring	12 months	2
999 01 10 01 11_0	LifeUVMQ03-quartz glass	24 months	1
702 01 01 00 00_0	Set LifeUVM03+USB03 PROFIPURE-UV lamp	5 000 hours	1

Table 8: ProfiPure 400 consumables list.

Item no.	Trade name	periodic replacement after	Number of pieces
999 01 01 01 09_0	Quartz Glass O-Ring	12 months	2
999 01 10 01 12_0	LifeUVMQ04-quartz glass	24 months	1
702 01 02 01 00_0	Set LifeUVM04+USB04 PROFIPURE-UV lamp	5 000 hours	1

Table 8: ProfiPure 500 consumables list.

Item no.	Trade name	periodic replacement after	Number of pieces
999 01 01 01 09_0	Quartz Glass O-Ring	12 months	2
999 01 10 01 12_0	LifeUVMQ10-quartz glass	24 months	1
702 01 09 01 00_0	Set LifeUVM10+USB10 PROFIPURE-UV lamp	5 000 hours	1

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Kosinova 2116/19
612 00 Brno
Czech Republic

www.lifetechozone.com
sales@lifetechozone.com
service@lifetechozone.com

20. Contact information

Please do not hesitate to contact us with any questions or comments.

We speak Czech, English, German, Arabic, Russian.

LIFETECH s.ro.

reg ID: 25504401
VAT ID: CZ25504401

Headquarters Brno
Kosinova 2116/19
612 00 Brno
Czech Republic

Sales department	**Service department**
sales@lifetechozone.com	service@lifetechozone.com

www.lifetechozone.com

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