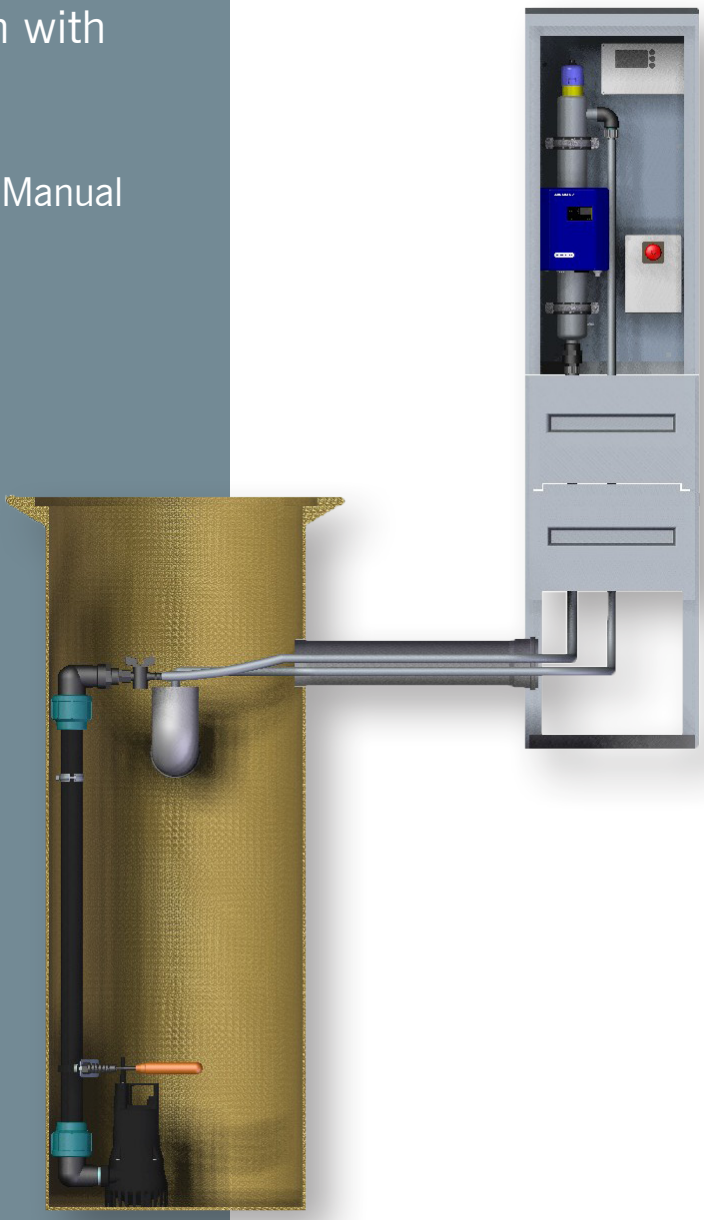
AQUATO®
umwelttechnologien

Disinfection with UV-module

Operation Manual



Manufacturer:

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Content

1 General description of the UV process

Disinfection by means of ultraviolet (UV) light is an effective, economic and environmentally friendly process. It is a purely physical process. UV light kills pathogenic microorganisms within seconds without leaving residues, harmful byproducts or smell and taste disturbances. A risk for operating personnel by handling harmful chemicals can therefore be excluded.

The effect of the UV-light is used by particularly effective UV-C radiation (254 nm). It causes a photochemical reaction within seconds in the vital DNA (desoxyribonucleic acid) of all microorganisms. Thereby the microorganism itself or its reproduction rate is destroyed.

The killing rate depends on the minimum UV radiation (UV dose), which is the time, in which a microorganism is exposed to a particular UV radiation intensity (W / m²).

The disinfection performance of a UV system is essentially based to the fact that each volume element receives the required UV dose as it flows through the UV reactor. To ensure this, radiation field and hydraulics in the UV system are optimally aligned. The UV radiation of treated wastewater with the UV-dose used for the disinfection does not lead to any unwanted side reactions. Since no active substances are added to the water, there is no depot effect present in the water after passing through the UV reactor.

Caution:
Only when using original AQUATO® spare and maintenance parts, the function and thus the disinfection performance can be ensured in the wastewater treatment plant.

If you have questions, please contact:

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2 Safety Information

This manual applies only to the UV module and contains important instructions and warnings. These instructions must be read and observed before installation and commissioning by the technichian and the responsible operator of the plant.

While working on the system, in addition to the safety instructions given in this manual, also the safety manual of the upstream wastewater treatment plant must be observed.

Not only the general safety instructions listed under the main point "safety", but also the following specific safety instructions must be observed.

2.1 General Safety Information

This operating manual contains basic instructions that have to be followed during the installation, commissioning and maintenance.

The complete operating instructions must be stored directly at the plant, so that both, operators and qualified staff, may inspect these at any time.

The safety information listed in these installation instructions, the existing national regulations for accident prevention and any internal working, operating and safety regulations must be observed.
Ignoring the safety instructions can present a risk to people as well as for the environment and leads to loss of any claims for damages.

2.2 Terminology

Operator
The operator of the plant is the one who ensures that the system is operated functionaly.

Qualified/ Skilled staff
is able to identify, judge and perform the delegated tasks and risks due to his technical skills.

2.3 Thread Analysis

The AQUATO®-Disinfection System was developed according to the state of the art, and subjected to a threat analysis to ensure maximum security. To eliminate or minimize any risk, please observe the following instructions.

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2.4 Used Warning Symbols

Below you will find a list of the symbols used in this manual and their meaning.
Ignoring can present a risk to people!

Warning concerning a point of danger

Warning concerning electrical voltage

Injury to the eyes, eye protection should be worn.

2.5 Due Diligence of the Operator

Make sure that

- the system is used only in accordance with its specified operation
- the system is operated in a proper condition
- slef-monitoring is carried out by the operator
- the maintenance intervals are observed
- Maintenance and repairs are carried out by qualified staff only
- the operation manual is available at any time

2.6 Precautions

This manual does not consider either all design details and variants nor all the possible eventualities and events that may occur during the installation, operation and maintenance.

Precondition for the installation and operation of the switchgear is the use of trained personnel.

(see EN 50 110-1).

In case not all the information and instructions are found in this manual, please contact the manufacturer.

In case of disregarding, the manufacturer and supplier of this system is not responsible.

The connection and maintenance of the system may only be carried out by skilled personnel.

Before commissioning and turning on power, make sure that

- The device and the connection cables show no damage
- Particularly the mains connection and the connections of the aggregates are connected correctly
- All connections have been carried out properly and professionally
- Laying / Completion of all cables meet applicable standards
- The unit is properly closed
- The system is professionally secured

The valid regulations (EN, VDE, ..) as well as the regulations of the local power suppliers must be observed.

2.7 Safety Instructions

The accident prevention regulations regarding work on wastewater treatment plants (BGV C5) must be observed. The connection of the control may be carried out by skilled personnel only. The following safety instructions must be observed when working and touching the wastewater treatment plant for your own safety:

Must be switched off before opening the unit

Caution:

- Live parts
- Sensitive Components
- Risk of loosening up the internal wiring

UV lamps may only be used in the radiation compartments if suitable protective covers are in place. UV-C radiation is harmful to eyes and skin. Persons should never be exposed to the UV-C radiation.

1. Switch Off UV system!

Special care is required during maintenance in the storage tank. In this case, generally the system must be disconnected and secured against accidentaly turning on of power supply!

Risk of electric shock with damaged live parts.

2. Ventilate the plant, pit entry only with protection and supervisor!

Through biological processes in the preceding stage, hazardous gases for humans can be formed. This can lead to loss of consciousness and / or death by suffocation, even if there is no noticeable odor. That is why entering the sewage treatment plant is only allowed under the supervision of another person outdoors and after good ventilation and with appropriate safety precautions (like gas detector, safety lines).

Never get after unconscious persons, but immediately seek for help!

3. Electrical protection, FI circuit breaker!

The AQUATO®-disinfection system works with 230 V / 1-phase / 50 Hz AC Voltage.

Staff may not be exposed to the risk of electric shock to due to carelessness during operating the control. Prior to commissioning the system, the proper functioning of the electrical protection must be checked by an authorized electrician. The equipment must be protected with a FI circuit breaker.

2.8 Safety Information For Qualified Staff

Maintenance and repairs may be carried out by qualified personnel only. Before carrying out the work it must be ensured that

- the knowledge and skills of the staff correspond the purpose of use
- taff training has taken place
- the instruction manual was read and understood

Prior to and during the work in the tank it has to be ensured that that no hazardous gases and no explosive atmosphere or oxygen deficiency can occur by using ventilation.

Prior to and during the work in the tank it has to be ensured that that the system is disconnected from power and secured against reconnection.

Working in tank requires safeguards even at low altitudes. Therefore, appropriate actions are to be taken to prevent falling.
If appropriate actions are not possible, personal protective measures against falling should be used.

Always wear suitable protective clothing, as well as hand, foot and face protection.
Avoid contact with wastewater.

We point out that despite all taken precautions at the installation, remaining risks can not be excluded:

- danger of stumbling
- danger by electrical voltage
- risk of infection by germs and bacteria

3 Functional Description

The UV module is fed from a storage tank, in which a feed pump takes over the promotion to the UV reactor. Here, the UV module is in a pre-assembled control column (outdoor cabinet with UV module and control, see scope of delivery) installed outside of the wastewater treatment plant.

The treated wastewater is led out from the storage tank for disinfection directly during the pumping process through the UV unit, where the remaining pathogenic microorganisms are killed within seconds by ultraviolet light (UV). The outlet of the disinfection unit is led directly into the outlet of the storage tank by a hose.

The control of the UV module is realized via the corresponding control.

The system can be operated in 2 different modes. On the one hand control can be made by float switches and on the other by time clock.

In order to use the full power of UV light, the UV lamp is turned on already 2 minutes before the pumping process and still remains on for 2 minutes after switching off.

The maximum lifetime of the UV lamp of 2000 hours of operation is already stored in the controller. For this purpose in the controller, a counter is integrated, which counts down to 0 h and then gives an alarm signal for the upcoming, required replacement of the UV lamp. The lamp needs to be cleaned at every service.

3.1 Cleaning Performance

The **AQUATO®** UV-disinfection can reach a degradation efficiency of faecal coliform germs of ≤ 100/100 ml by qualified random sample.

3.2 Sampling

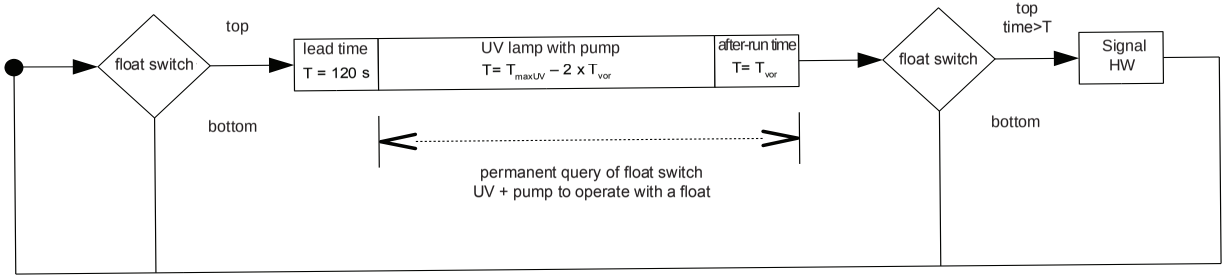
A **germ-free** sampling at the end of the disinfection is **not** provided, because according to approval from the DIBt it is not a maintenance parameter. If proof of faecal coliform germs is required, it should be noted that a re-infection can occur through unsterilised sampling tanks, transporting and simply through the air.

3.3 Flowchart of the UV treatment

Flowchart Control UV-Pilot 8.3

Cycle UV unit:

<float switch>



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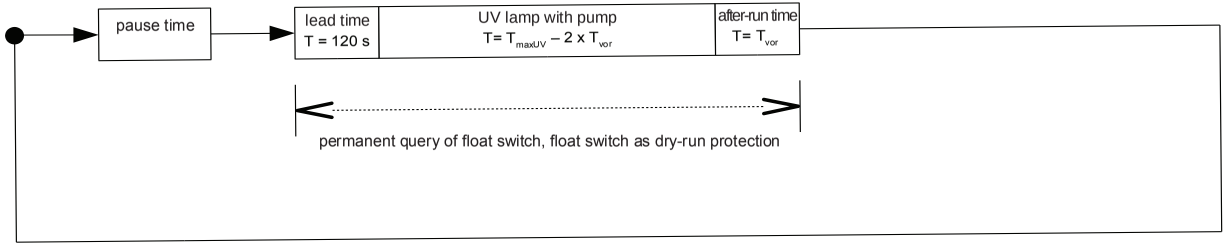


4 Scope Of Delivery

Scope of delivery with a plant size of 4 – 6 PE:

1. Storage Vesser PE ø 600
2. Feeding pumo Oxylift with 10 m cable
3. Float switch with 10 m cable
4. Open-air column Model 2
5. UV-Lamp Aquada 2
6. Control UV-Pilot 8.3
7. Junction-box with line breaker
8. Hose ø 16 mm, L = 20 m
9. 2 rubber lip-seals DN 100

AQUATO® H-Modul
UV-unit with control in open-air column

Feeding pump
And float switch
In PE pit

1 Pair of cotton gloves (one size) for installation of the quartz glass and the UV lamp

5 Installation And Comissioning

5.1 Safety instructions for installation and commissioning

During installation attention is drawn to the relevant standards and other regulations and accident prevention regulations. The installation of the system have to be carried out by qualified staff only.
Bei Schäden, die durch eine eigene Durchführung der Installation verursacht werden, übernimmt der Hersteller keine Haftung.
Failure to comply with the following safety instructions may lead to the restriction or complete loss of liability by the manufacturer.
Interference with the unit and any repairs may only be done by the manufacturer.

Prior to installing the UV lamp following points must be ensured:

- The max. working pressure of 1000 kPa may not be exceeded.
- The max. ambient temperature is 40 ° C.
- The max. flow rate must not be exceeded. (see. appendix)

Before commissioning and turning on power, make sure that

- The device and the connection cables show no damage
- Particularly the mains connection and the connections of the aggregates are connected correctly
- All connections have been carried out properly and professionally
- Laying / Completion of all cables meet applicable standards
- The unit is properly closed
- The system is professionally secured

Prior to and during the work with the control make sure that

- that the system is disconnected from power
- Replace fuses only de-energized.
- Do not use fuses higher than approved amperage
- Do not make any circuitry manipulations on the system.
- The valid regulations (EN, VDE, ..) as well as the regulations of the local power suppliers must be observed.
- If a fuse is broken, it may onle be replaced by a microfuse of this type: **Microfuse, passive, Typ 3,15 A, 5 x 20 mm** acc.to EN 60127-2/III with a maximum power loss of 1,5 W. This fuse is also built in at the factory.

The cable to the device have to be laid properly. In particular, pay attention that greater mechanical stress on the cables is avoided, f.e. by insufficiently fixed cables, since otherwise the protection class IP54 can not be guaranteed.

5.2 Connection to the wastewater treatment plant

The UV unit is connected as the final stage behind the existing wastewater treatment plant. For this purpose the storage tank is placed at the end of the treatment plant. In the storage tank the feeding pump of the UV module is installed with the float switch. The pump is connected with the supplied hose to the UV lamp. The hose is attached to the discharge of the pump using the stainless steel clamp and connected to the appropriate hose connector of the UV unit in the open-air column. All lines must be installed with a slope so that no residual water remains in the pipes (risk of frost).

5.3 Control

When connecting the control, the national regulations and specifications on the nameplate should be observed. These installation instructions include only the relevant information parts for commissioning the UV unit .

5.3.1 *Electrical connections*

Delivery of the UV unit is in a pre-mounted open-air column. Make sure that a power supply (230 V / 1-phase / 50 Hz) is available and fused separately as follows:

B 16 A passive and FI circuit breaker 25 A / 30 mA.

The power cable is connected to the junction box with line breaker.

5.3.2 *Float switch*

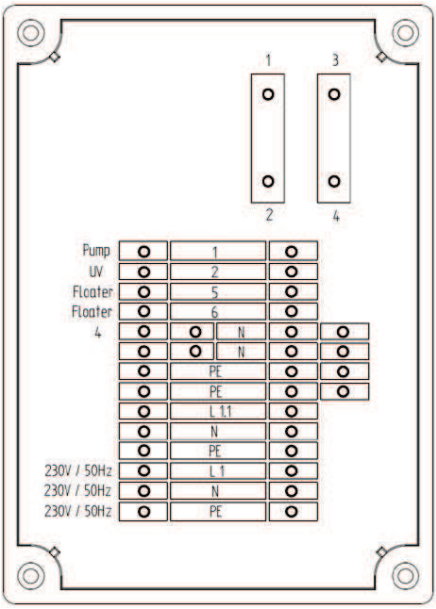
The float switch is connected via the junction box to the control (see chart). This controls the pump with the settin "float switch" and serves as protection against dry running.

5.3.3 *Feeding pump*

The feeding pump (clearwater pump) in the storage tank is connected via the junction box to the control (see. chart)

5.3.4 *Connection of UV-Module*

The graph shows the terminal assignment in the junction box.



Consumer terminal

	from	to
Feed in max 10 A	L	L 1
Feed in max 10 A	N	N
Feed in max 10 A	PE	PE
Clearwater pump	L	1
Clearwater pump	N	4
Clearwater pump	PE	PE
UV lamp	L	2
UV lamp	N	4
UV lamp	PE	PE
Float switch	L	5
Float switch	N	6
Float switch	PE	PE
Line Breaker	1	L 1
Line Breaker	2	L 1.1

Control terminal

	from
230V / 50Hz	L
	N
	PE
7-pin connector	
wire 1	1
wire 2	2
wire 3	3
wire 4	4
wire 5	5
wire 6	6
wire 7	7

5.4 Installation of the quartz tube and the UV lamp

The supplied cloth gloves should be worn installation or expansion of the quartz tube and / or the UV lamp in order to protect the parts from fats, scratches and such likes, which can significantly reduce the performance.

The UV lamp has a service life of about 2000 hours of operation to achieve the desired cleaning performance. With full operated cycles of the small wastewater treatment plant, this leads to an operating time of about 2 years before a lamp replacement is necessary.

The setting of the counter is carried out under "Parameter" in the menu item "UV lamp". Under operating hours, the remaining life of the UV lamp will be displayed.

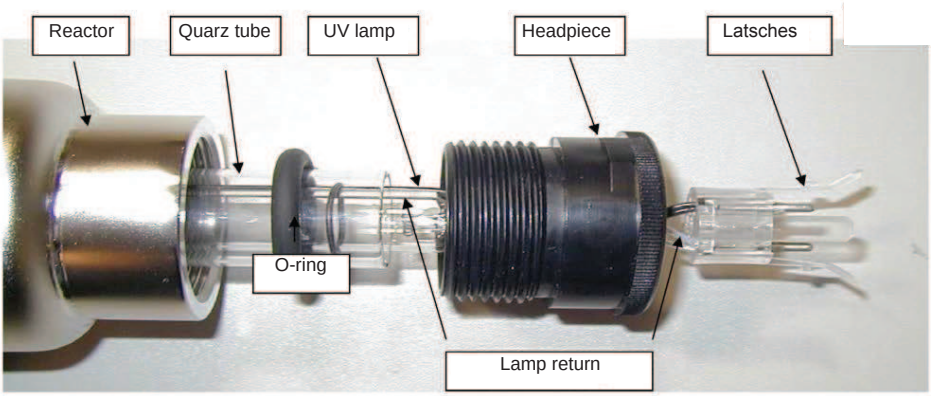
For the initial commissioning the UV disinfection unit is delivered pre-assembled in an appropriate open air column. The UV lamp is already fitted into the quartz tube. For lamp replacement, the UV reactor can be folded out to the front by means of a hinge pre-mounted in the steering column, to insert the lamp easily.

Attention! Plastic bottles (latches, s. Illustration) are very sensitive. Use cautiously.

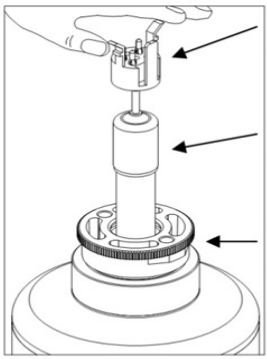
The head piece, in which the UV lamp is inserted on site, has to be screwed to a torque of 5 Nm when changing or for maintenance. Before commissioning, all bolt connections should be checked for tightness.

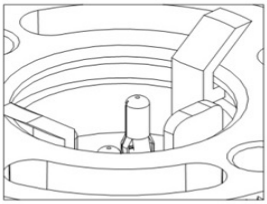
5.4.1 *Replacement of the UV lamp*

The UV lamp has to be taken out of the package and wiped with a clean towel (do not touch your fingers on the lamp!). Insert the lamp into the headpiece to the transparent latch flags of lamp plug into the headpiece. (Press in the latches with two fingers slightly when inserting , see below).

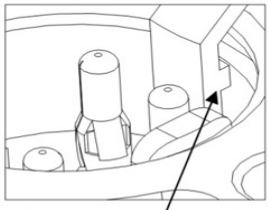


5.4.2 *Cleaning and replacement of the quartz tube*



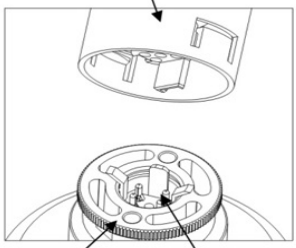


Properly installed lamp connection



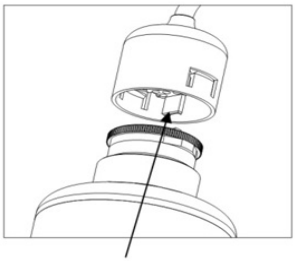
Wrong installed lamp connection

Transparent lamp connection

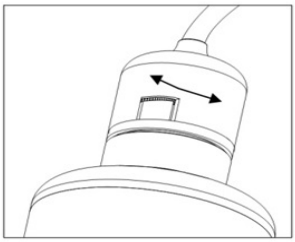


Headpiece

UV lamp



Put connector on headpiece (pay attention to guidance)



Plug in connector until it clicks

The quartz glass tube has to be cleaned at every maintenance, so 3 times per year, in order to ensure optimal operation (maximum cleaning interval four months!).

The transparent plug of the lamp connection has to be disconnected by turning it slightly to the left or right (up to the level of the headpiece).

Remove the UV lamp by pressing the two transparent latches from the reactor. Turn headpiece out of the reactor and then carefully remove the quartz tube. Hold tight both parts!

Then remove the film from the quartz tube with a wet-wipe (if necessary use cleaner, like light citric) and reinstall in clean, dry condition.

5.5 Commissioning

If all the preparatory works, like installation of the storage tank, installation of open air column, connection of units as well as inserting the UV lamp and installation of the system, are fully completed, the system can be put into operation.

During commissioning, the following must be entered first:

- Password (2007 for first commissioning)
- Language
- Date and Time
- Type of unit

After setting the queried parameters, the standard display appears and the system is in operation

	**The commissioning engineer must ensure that the parameter settings are carried out so that they correspond to the requirements for the operation of the plant.**

6 Operation of the system

The UV disinfection system runs fully automatic. Apart from maintenance, no interference with the operation of the plant is usually required. The system must be permanently in operation. Only in an emergency or for maintenance of UV system it must be switched off with the line breaker.

The operation of the wastewater treatment plant has to be carried out by the owner or by a person authorized by him (operator).

The functionality of the system must be checked regularly by an expert. These checks are carried out at regular intervals and primarily to maintain the operation of the system under control. Malfunctions have to be communicated to the maintenance service and repaired immediately. For each small wastewater treatment plant, an operation diary must be kept. Here, the results of own checks are entered and maintenance reports are recorded. On request, the operation diary has to be presented to authorities and the maintenance service.

Daily controls:
It is required to check that the system is in operation.

Monthly controls:
Following inspections have to be carried out:
- Control the inlets and outlets for blockages (visual inspection)
- Read the operating hours counter of the UV lamp and the pump.
- The written entry into the operations diary is unnecessary for the AQUATO®-disinfection system, since the control has an electronic logbook which records the operating hours.

Any defects or faults must be rectified immediately by the operator or by an authorized expert and noted in the operation diary.

6.1 Operaion and Display

The control has a graphic LCD display with 128 x 64 pixels. The displays are in plain text. It is operated via three buttons and two LEDs.

Arrow keys to select the menu items

Center button to confirm the entry

Arrow keys to select the menu items

The green LED remains permanently on when the unit is on. In case of a fault / error, the red LED flashes. In case the green and red LED are illuminated permanently at the same time, the device is initializing.

Each menu consists of a series of illustrations on the LCD display. Switch from menu to menu by using the arrow keys.

Press the ← key to enter the input mode of the respective menu item. The input mode can be seen by a selected line (shown inverted). With the ↓ ↑ keys now the rows can be selected, by pressing the ← key the values can be changed.

Is a multi-digit entry is required, the highest point is replaced at first. Press the ← key to move on to the next point, etc. If a selection of different options is required (eg yes / no), the desired selection is done via the arrow keys ↓ ↑. When the desired option is displayed, this is confirmed by pressing the ← key.

6.2 Main Display

In the default display the control shows the switching status of the plant and of the units such as.:

1. st Line: the date and time

2nd Line: UV-Control

3rd Line (right): (remaining) time, how long the recent phase still lasts

4rd Line: Shows if feeding pump is running

„pump on“ or „pump off“

5th Line: Shows if UV lamp is running

„UV lamp on“ or „UV lamp off“

6th Line: fault Indication or „no fault“

7th Line: float Switch status up / down

By pressing the ↵ the following is displayed

- Release
- Date of release
- UV-Module
- set process type: „float switch“ or „cycle“

With the ↵ button you can also turn off the buzzer

6.3 Error Messages

If an error occurs in the system on, an acoustic signal sounds, the display shows an error message and a red LED next to the display flashes. In this case please call your service and maintenance technicians, so that he can look after the system and eliminates the failure.

Do not press the emergency stop switch and not switch off the power to turn off the buzzer.

Press the ↵ -key. Then the acoustic signal ends. The red LED will continue to flash and the error message on the display in the default display is on.

These functions are set back to normal by the maintenance and service technicians.

All error messages (even power failures) are stored in the fault memory, in order to understand the occurrence of disturbances.

Display	Possible reason	Solution
I Pump The clearwater pump has not consumed current	- Clearwater pump defect - Fuse blown	- Replace clearwater pump - Replace fuse
I UV The UV lamp has not consumed current	- UV lamp defect - Fuse blown	- Replace UV-lamp - Replace fuse
UV-Lamp	- expected runtime of the UV lamp exceeded	- Replace UV-lamp
HW Highwater max. runtime of the UV-lamp was exceeded	- Infiltration water inflow - Backwater from receiving stream - Power failure - Float switch broken - Clogged clearwater pump - Clearwater hose damaged	- Locate and shut off inflow - Possibly one-time event - Establish durable power supply - Replace float switch - Eliminate clogging - Replace hose
Battery	- Battery empty, broken or not inserted	- Put in new battery
Clock	- Clock is not set	- set clock

6.4 Error Messages UV-Lamp

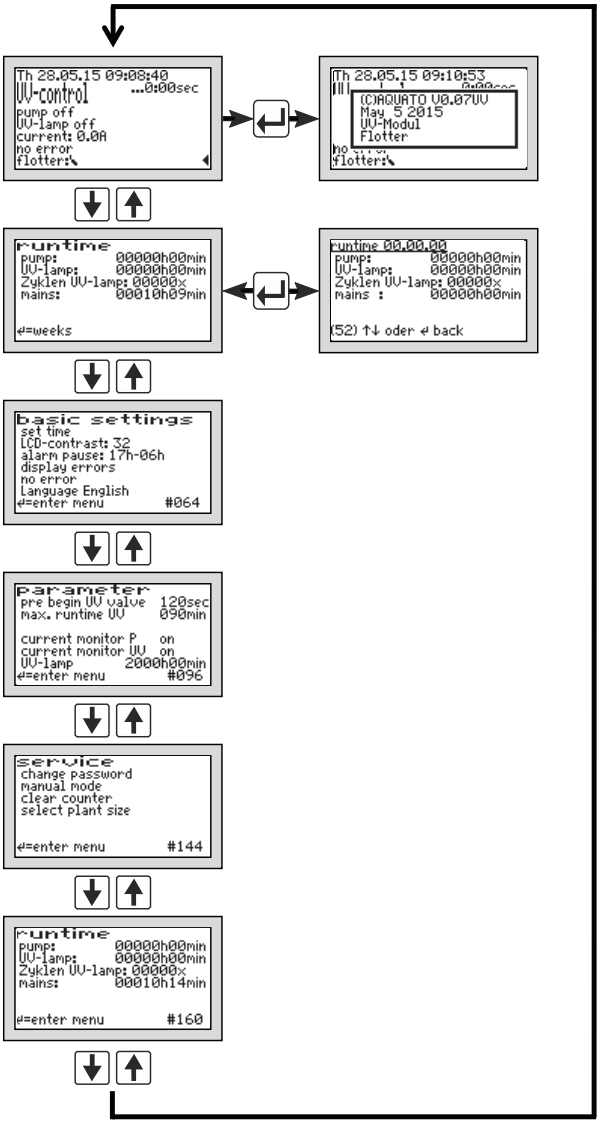
Display: "UV-lamp" (flashing, appears in the second last line of the display!)

An error message of the UV unit is only displayed when the preset counter has counted down to to 00.00 and no replacement of the UV lamp has been made by then.
The error message should be acknowledged and deleted as follows:

Press button to turn off the acoustic alarm. Replace the UV lamp (only use original spare parts). Thereafter, the counter must be reset again to ensure the alarm message of the UV lamp. Finally, the error must be removed from the current display, under the menu item "Settings" - "Delete error", so that the operation of the plant can be carried out properly.

6.5 Menu

6.5.1 *Menu structure*



The exact display depends on the status of the plant and on the set parameters. The different variants of the display will be explained more detailed below.

Changing the display menus with the arrow keys: ↓ ↑

6.5.2 *Display of operating hours*

In the menu item operating hours, the operating hours of the individual units are shown. The operating hours are counted when the control turns on the compressor and the pump. It is displayed in hours and minutes.
By pressing the ← key, the operating hours of the last weeks
(up to 52) are displayed (operations diary).

The last line represents the date of the week (example calendar week 1) in which values were stored (always on Sunday). Using the ↓ ↑ keys you can scroll from week to week.

Note: This function only works correctly when the date and time have been set correctly.

6.5.3 *Menu Settings*

The menu SETTINGS is mainly intended for the service technician. The settings menu is accessed by pressing the ↵ button. The following submenus are available:

- Setting the clock (only with special password)
- LCD contrast
- Alarm Pause
- Display error
- No fault / Delete alarm
- Language

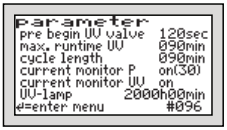
6.5.4 *Delete Alarm*

When an error has occurred, In the Settings menu the display in the sixth line changes from "no error" to "Delete Alarm“
After changing into that menu with the ↵ -key, you can choose „Delete Alarm by pressing ↓ ↑ buttons. After that the alarm is acknowledged by pressing the ↵ button. Which means: the display is switched to "no error", the red flashing LED is turned off and the error in the default display is reset. (However, the error is recorded in the fault memory.)

6.5.5 *View Errors*

From this menu „view errors“, the error logbook is called. The settings menu is accessed by pressing the ↵ button. The error logbook shows the last events with date and time.

6.5.6 *Menu Parameter*



The menu PARAMETER is mainly intended for the service technician. The settings menu is accessed by pressing the ↵ button. The following submenus are available:

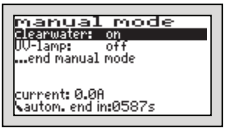
- Lead time UV-Lamp
- Max. runtime UV
- Pause time (only with cycle process)
- Current measuring P
- Current measuring UV
- UV-Lamp

6.5.7 *Service-Menu*

The menu SERVICE is mainly intended for the service technician. The settings menu is accessed by pressing the ↵ button. The following submenus are available:

- Change password (only with special password)
- System test / Trial Run
- Manual operation
- Clear counter (only with special password)
- Select plant types (only with special password)

6.5.8 *Manual Mode*



The UV unit can always be switched to „manual mode“ via the menu in order to verify their functioning.

In manual mode, each of the units can be switched manually ON or OFF (f.e. for a test run).

With the use the buttons ↓ ↑ the unit is selected and the unit is switched ON or OFF by pressing the button. ↵

With the menu item "... end manual operation" the manual mode ends.

After the manual operation, the cycle continues.

7 Maintenance

7.1 Maintenance works

The maintenance of the upstream wastewater treatment plant, eventually buffer tank and the UV-system has to be carried out as a total maintenance at least three times a year (distance of approximately 4 months) by qualified personnel only and includes the following tasks:

- Inspection of the operators diary with determination of the regular operation (target-performance comparison)
- Function control of important mechanical, electrical and other system components
- Functional control of the control panel and alarm function
- Maintenance of the UV lamp.
- Carrying out general cleaning works, specially of the UV lamp
- Verification of the structural condition of the UV system
- The servicing carried out is to be noted in the log book.
- If required, according to the approval
  - a sample of the discharged water has to be taken and following values have to be checked:
    - Temperature
    - PH- value
    - Suspendable solids
  - With every second maintenance the following values have to be checked:
    - COD
    - NH_4-N
    - $N_{anorg.}$

The results and the work carried out has to be recorded in a maintenance report. The maintenance report has to be sent to the operator. The operator has to combine the operations manual with the maintenance report and submit this to the relevant authority or the local water authority upon request.

In addition, maintenance works for the upstream biological wastewater treatment system are necessary. These can be found in the installation- and operation instruction and the approval.

8 Manufacturer´s Certificate

Type of unit:	AQUATO® UV-Pilot 8.3 +H Electronic control unit for automatic operation of a disinfection as tertiary treatment for fully biological small wastewater treatment plants
Guidelines:	EMV-Directive 2004 / 108 / EWG Low Voltage Directive 2006 / 95 / EWG
Applied Standards:	EN 61000 - 6 - 3 (2001) EN 61000 - 6 - 1 (2001) EN 61000 - 3 - 2 (1995) EN 60204 - 1 (1997)
Manufacturer:	AQUATO® Umwelttechnologien GmbH Ernstmeierstraße 24 32052 Herford

9 Operators Diary

Power Network	Pump for feeding the UV-Module	UV-Lamp	Cylcles UV-Lamp

Comments, Events (Maintenance, Errors, Sludge Disposal etc.)	Date	Signature

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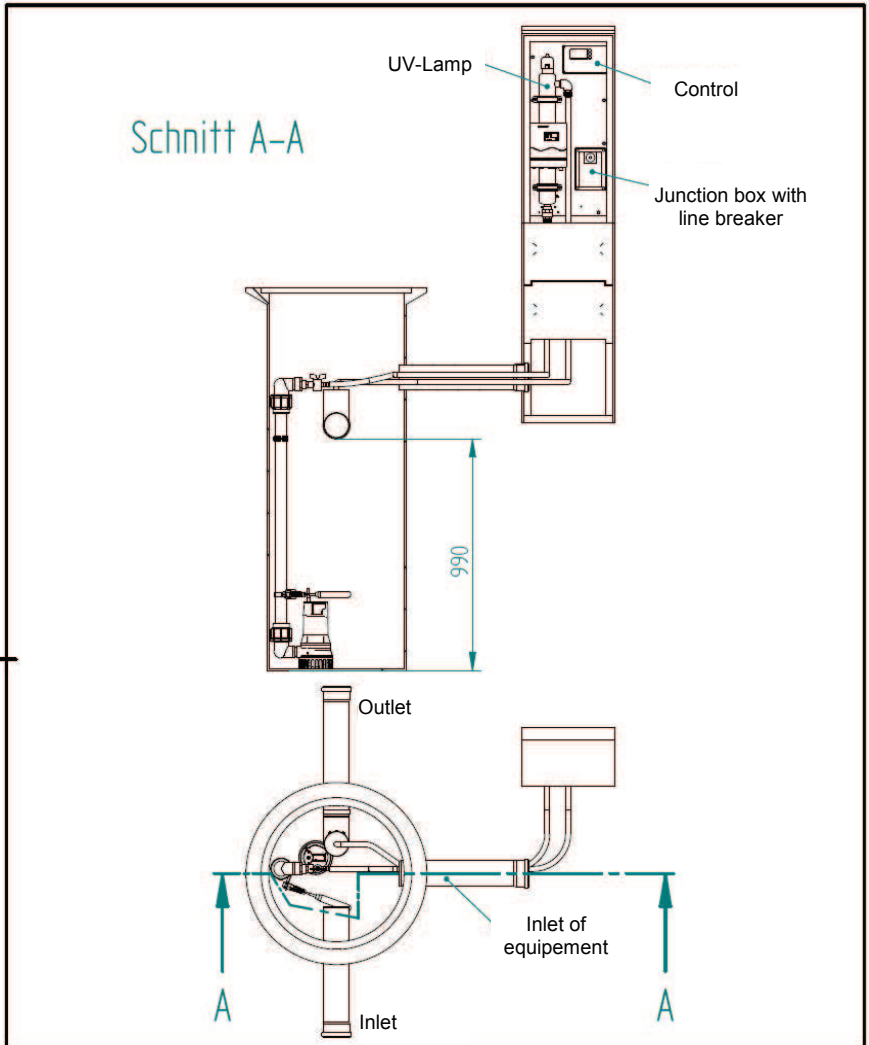
Power Network	Pump for feeding the UV-Module	UV-Lamp	Cylcles UV-Lamp

Comments, Events (Maintenance, Errors, Sludge Disposal etc.)	Date	Signature

10 APPENDIX

10.1 Appendix 1 – Drawing

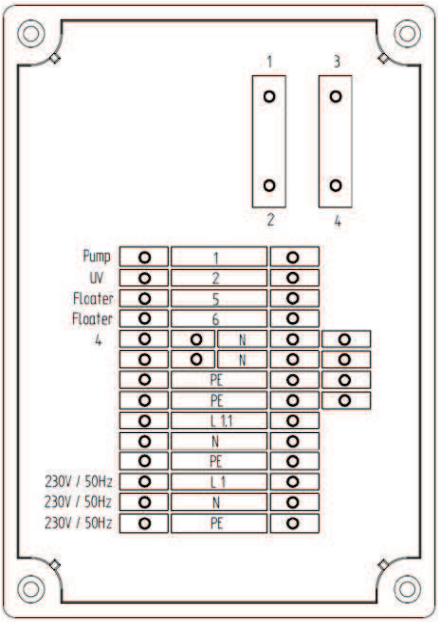


10.2 Appendix 2 – Control UV-Pilot 8.3

Electrical work on control, UV unit and pump may only be carried out by a qualified electrician.

Mains Connection:	230 V / 1-phase / 50 Hz
Separate Fuse:	B 16 A passive and FI circuit breaker 25 A / 30 mA
Microfuse in device:	**Microfuse, passive, Typ 3,15 A, 5 x 20 mm** acc.to EN 60127-2/III with a maximum power loss of 1,5 W

The graph shows the terminal assignment in the junction box.



Consumer terminal

	from	to
Feed in max 10 A	L	L 1
Feed in max 10 A	N	N
Feed in max 10 A	PE	PE
Clearwater pump	L	1
Clearwater pump	N	4
Clearwater pump	PE	PE
UV lamp	L	2
UV lamp	N	4
UV lamp	PE	PE
Float switch	L	5
Float switch	N	6
Float switch	PE	PE
Line Breaker	1	L 1
Line Breaker	2	L 1.1

Control terminal

	from
230V / 50Hz	L
	N
	PE
7-pin connector	
wire 1	1
wire 2	2
wire 3	3
wire 4	4
wire 5	5
wire 6	6
wire 7	7

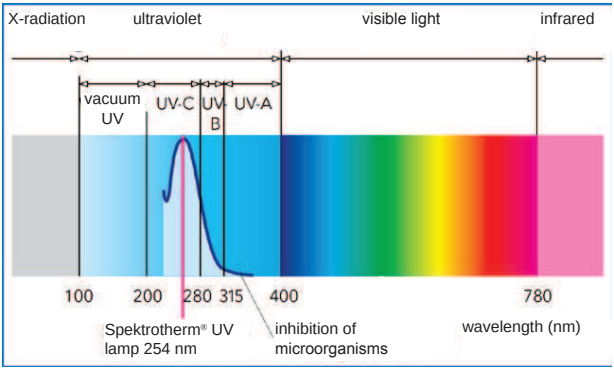
10.3 Appendix 3 – UV-Module Aquada 2

Electrical work on control, UV unit and pump may only be carried out by a qualified electrician.

Technical Data

Max. Flowrate (m³/h)	
with radiation intensity	
* 400 J/m²	1,85 m³/h
* 300 J/m²	2,47 m³/h
max. working pressure	1000 kPa
Permissible ambient temp.	0 °C – 35 °C
Pipe connection (inches)	3/4 ‘‘
Power	55 W
Reactor size (H x W x D)	670 mm x 95 mm x 70 mm
Weight	2,4 kg

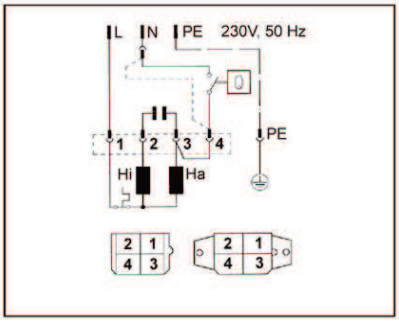
* UV-transmission 98 % T 1 cm at the end of its useful life

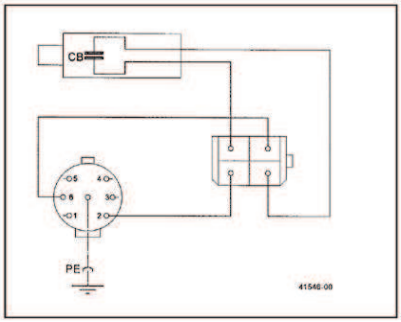


10.4 Appendix 4 – Pump Oxylift 2

Electrical work on control, UV unit and pump may only be carried out by a qualified electrician.

Electrical connection with circuit





Technical Data

m	[kg]	4,4
		1 ¼ "
	[mm]	15
P1	[W]	300
P2	[W]	200
U	[V]	1/N/PE ~230
f	[Hz]	50
I	[A]	1,3
n	[min^{-1}]	2720

Flowrate

H [m]	1	2	3	4	5
Q [m /h]	8	7	6	4	2

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Installation Company:

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