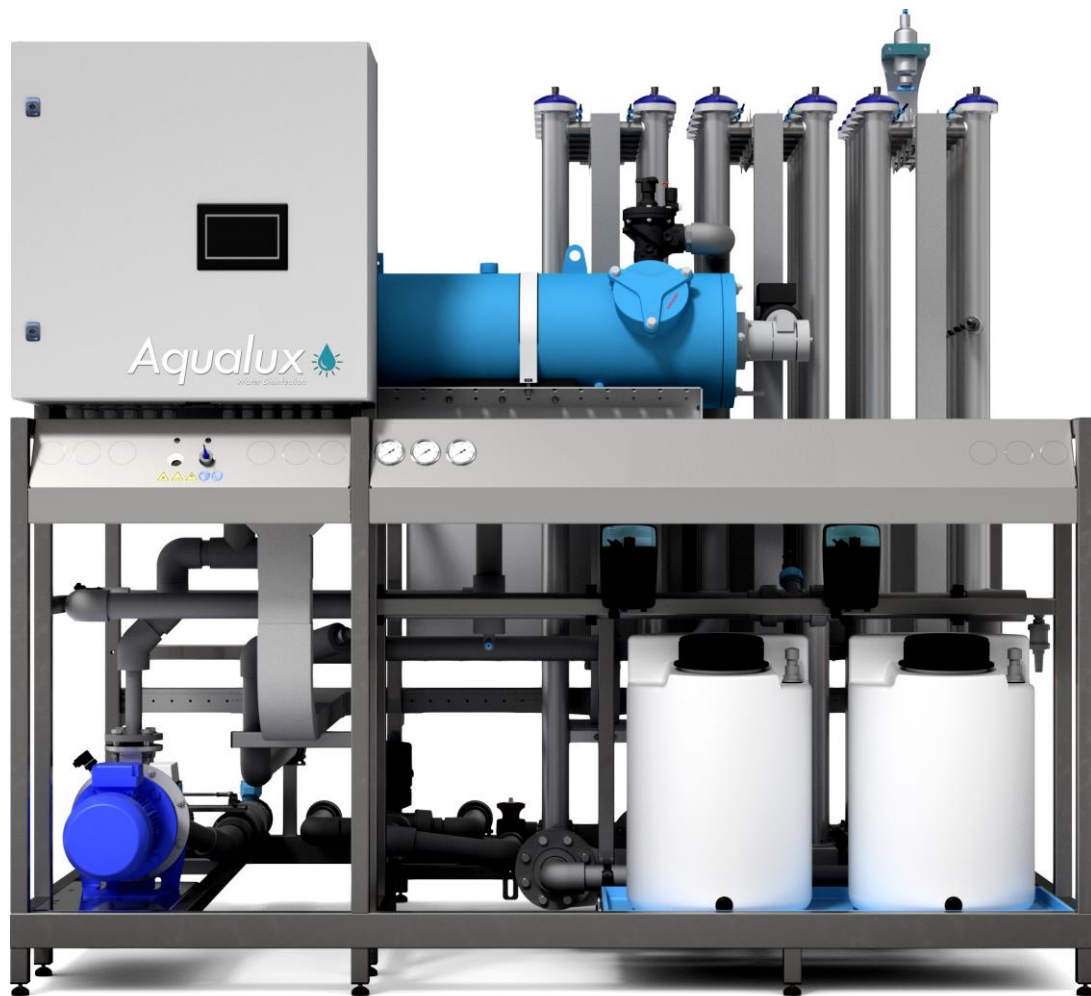


USER MANUAL



AQUALUX PROFESSIONAL

These are the original English instructions/Translation of the original English instructions

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All pertinent state, regional, and local safety regulations must be observed when using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer or dealer shall perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to observe this information can result in injury or equipment damage.

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Product Modifications

YEAR	TYPE	MODIFICATIONS
2016	2016-1	

Document Revisions

DATE	VERSION NUMBER	DOCUMENT CHANGES
9 JULY 2018	1.00	INITIAL DRAFT
6-AUGUST-2018	1.01	CHANGES IN SYNTAX
22-MARCH-2019	1.02	1.5.5 DEALER INFORMATION

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1 GENERAL INFORMATION

1.1 Description of the User

This manual is intended for the users and maintenance operators of the Aqualux. The user is expected to have limited to no knowledge of mechanical, electrical or software engineering. Therefore only users that have been properly educated in all the functions, risks and parts of the machine are allowed to operate the machine. Only trained maintenance operators are allowed to apply maintenance to the machine. If necessary the operator can contact Artechno for education on the correct use of the machine.

This document is intended for the maintenance operators and users of the Aqualux.

1.2 Conventions Used in This Manual

The following style conventions are used in this document:

Bold

Names of product elements, commands, options, programs, processes, services, and utilities
Names of interface elements (such as windows, dialog boxes, buttons, fields, and menus)
Interface elements the user selects, clicks, presses, or types

Italic

Publication titles referenced in the text
Emphasis (for example a new term)
Variables

`Courier`

System output, such as an error message or script
URLs, complete paths, filenames, prompts, and syntax

User input variables

< > Angle brackets surround user-supplied values

[] Square brackets surround optional items

| Vertical bar indicates alternate selections – the bar means “or”

1.3 Explanation of Safety Warnings

⚠ DANGER

DANGER INDICATES A HAZARD WITH A HIGH LEVEL OF RISK WHICH, IF NOT AVOIDED, WILL RESULT IN SERIOUS INJURY OR DEATH.

⚠ WARNING

WARNING INDICATES A HAZARD WITH A MEDIUM LEVEL OF RISK WHICH, IF NOT AVOIDED, COULD RESULT IN SERIOUS INJURY OR DEATH.

⚠ CAUTION

CAUTION INDICATES A HAZARD WITH A LOW LEVEL OF RISK WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE INJURY.

NOTICE

INDICATES INFORMATION CONSIDERED IMPORTANT, BUT NOT HAZARD-RELATED.

1.4 Retaining Instructions

Read and understand this manual and its safety instructions before using this product. Failure to do so can result in serious injury or death.

Follow all the instructions. This will avoid fire, explosions, electric shocks or other hazards that may result in damage to property and/or severe or fatal injuries.

The product shall only be used by persons who have fully read and understand the contents of this user manual and have been properly educated in the use of the product.

Ensure that each person who uses the product has read these warnings and instructions and follows them.

Keep all safety information and instructions for future reference and pass them on to subsequent users of the product.

The manufacturer is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with the safety instructions. In these cases, the warranty will be voided.

1.5 Obtaining Documentation and Information

1.5.1 Internet

There is no version of this manual to be found on the internet. If documentation is required please check subparagraph "1.5.2 Ordering Documentation".

1.5.2 Ordering Documentation

Documentation, user instructions and technical information can be ordered by calling Artechno at +31 (0) 174512051 or by sending an email to info@art techno.nl.

1.5.3 Other languages

This is the English user manual. Manuals in other languages are available upon request, the requesting party may be charged for translation costs.

1.5.4 Documentation Feedback

If you are reading Artechno's product documentation, any comments can be submitted on the support website www.art techno.nl or sent to info@art techno.nl.

Comments regarding the improvement of the manual are appreciated.

1.5.5 Support and service

For information regarding special tools, materials, questions, information, technical assistance or ordering user instructions, please contact your dealer:



2 DESCRIPTION OF THE PRODUCT

2.1 Intended Use and Reasonably Foreseeable Misuse

The Aqualux is intended to be used for cleaning the nutritional water allowing for eco-friendly draining of the water in a system and/or reentry in the current system. The Aqualux is available with or without a couple of optional modules see paragraph "4.3 Optional modules". On further note it is recommended to take additional measures to ensure hygiene of the water and environment.

2.2 Process Overview

The process of the Aqualux depends on the modules chosen by the client. In this paragraph a general overview of states is given using a state machine diagram (Figure 1).

NOTICE

NEVER RUN THE AQUALUX WITHOUT AN OPERATING FILTER TO FILTER OUT WASTE THAT CAN DAMAGE PARTS INSIDE THE UV CHAMBERS.

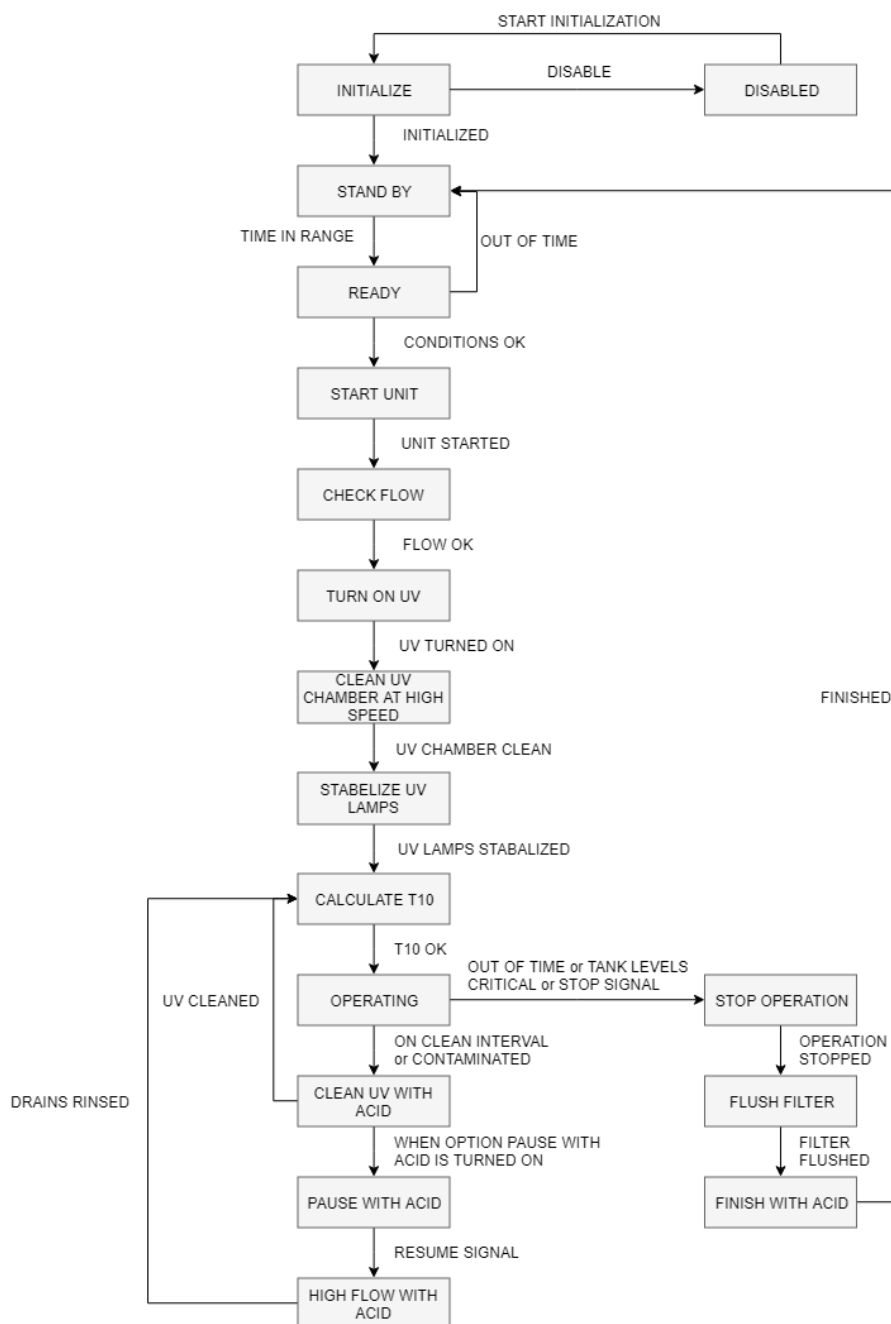


Figure 1 State machine diagram

2.2.1 During Start-Up

The Aqualux only starts between the set time (From) and set time (Till) interval. A batch that has started between this interval will always finish its operation even if the stop time has been reached. Before the Aqualux starts the Aqualux has to satisfy one of the following requirements:

- The water level in the contaminated water tank is above the set start value and the disinfected water tank is below the set start value;
- The manual start button is pressed on the touchscreen.

The Aqualux will stop automatically when:

- The contaminated water level gets below the set stop value.
- The disinfected water level gets above the set stop value.

During the start-up phase the 3-way valve stays in the return to contaminated drain orientation unless, the limit switch of the contaminated water tank is made and the limit switch of the disinfected water tank is broken.

When the starting requirements are met the system pump and UV lights are turned on immediately. Subsequently the pH regulation is initiated to regulate the pH value of the water to the desired pH value. If the optional hydrogen peroxide module is present it will initiate together with the pH regulation procedure.

It takes approximately 3-5 minutes for the UV lamps to reach their operating temperature. The flow will be adjusted to the UV dosage generated by the UV lamps in real time.

When the flow and dosage are stable the transmission value (T10) will be determined. This is done once and only when the Aqualux is in the start-up phase. This is necessary to ensure the quartz tubes are clean (see stop acid regulation). Determining the T10 value is always done after a certain interval after the starting the Aqualux. The parameters to calculate this value are the measured flow by using the flow indicator and the dosage applied to the water.

If the T10 value is below a set lower limit and the dosage is above the upper limit taking the dead zone in to account the 3-way valve will switch to redirect the water to the disinfected water tank.

A couple of counters start running when the Aqualux starts:

- Total amount of start-ups for the UV lights.
- The time the UV lights are in operation. Subsequently this counter adds one hour of time for each UV start-up cycle.

2.2.2 During Operation

During operation the dosage is regulated by regulating the flow of the water in the system. This causes the dosage to be stable on the set value in between the set dead zone (The maximum offset of the actual value).

The pH value is constantly measured and regulated to a set value using acid from the acid reservoir tank. A couple of times per hour (setting 11) the pH value will be regulated to a pH value of 3 to rinse the quartz tubes. Appropriately.

When the optional module hydrogen peroxide is integrated into the system the amount of hydrogen peroxide inserted is regulated. The amount of hydrogen peroxide added to the water is dependent on the flow of the water in the system.

During disinfection a couple of security precautions are thoroughly monitored namely:

- If all UV lights are turned on,
- If all power applied to the UV lights is approximately the same with a maximal offset of +/- 10% respectively,
- If the temperature of the water in the system is within set limits,
- If the pH regulation is functioning properly,
- If the dosage is the desired value, if the desired value is not met for a set time interval the 3-way valve will be set to send the water to the contaminated water tank.
- If the flow is between the set minimal and maximal flow (depending on the amount of UV chambers)
- If the thermostat of the system pump is within set limits.
- If the pressure difference between the screen filter / sand filter input and output is within set limits.

It is optional to mix clean water with the system water when the T10 value is too low or if the user desires to add clean water to the contaminated water. The user can set the amount the valve that regulates the amount of clean water added to the system in percentages. If the desired value is changed during operation the current batch will be finished and a new T10 value is determined on the next start-up cycle.

2.2.3 During Backflow Cycle

There are two filters available for the Aqualux, depending on the type of filter the required operations are executed.

2.2.3.1 Screen Filter

Backflow in a screen filter happens during operation. A backflow sequence is initiated when the pressure difference between the input and output water is a set value. The decline of the filter has to be at least 12 m³/hr with a pressure of 2 bar before rinsing starts. A rinse cycle takes approximately 20 seconds.

If the flow is greater than 12 m³/hr the flush valve and the backflow motor will be activated. The flow through the UV chambers will temporarily decrease making the UV dosage higher. This is not a problem. When the flow is lower than 12 m³/hr actions need to be taken to ensure a flow of at least 10 m³/hr before rinsing. To increase the flow the performance of the system pump needs to increase. To ensure that the dosage of the UV does not get too low because of the increase in flow the flush motor has to be pinched while increasing the pump capacity to the desired 10 m³/hr

2.2.3.2 Sand Filter

Backflow in a sand filter happens during the standby phase of the Aqualux. Furthermore a couple of requirements have to be met before initiating the backflow cycle in a sand filter, namely:

- De starting time is reached and the pressure difference during disinfection has been bigger than the set value;
- The amount of disinfection hours has been exceeded;
- The amount of disinfected cubic meters of water has been exceeded.

During the backflow cycle the valves the for sand filter in and sand filter out have to be open. Furthermore the backflow valve and the filter flush valve have to be opened as well.

During the inflow cycle which happens directly after the backflow cycle, the valves for sand filter in and the inflow crane have to be opened.

When the cycle starts during operation (start time is reached) the disinfection process stops and the sand filter will only go through its inflow cycle. If the inflow cycle has finished the inflow valve will be closed and the start procedure will be initiated.

2.2.4 During Stand By

If one of the water tanks indicates that its level is out of bounds the stop procedure will start. The 3-way valve will let the water flow to the contaminated tank and subsequently turns off the UV lights. The system pump stays activated in overrun time. During this overrun time the pH regulator regulates to a value of 3 pH if "Paused with Acid" is activated.

Security precautions that are monitored during the standby phase are:

- If all UV lights are turned off;
- The temperature of the water in the system.
- The temperature switch (If the temperature inside the UV chamber exceeds 50 degrees Celsius the power will be cut off);
- pH regulation is monitored.

2.3 Product Elements

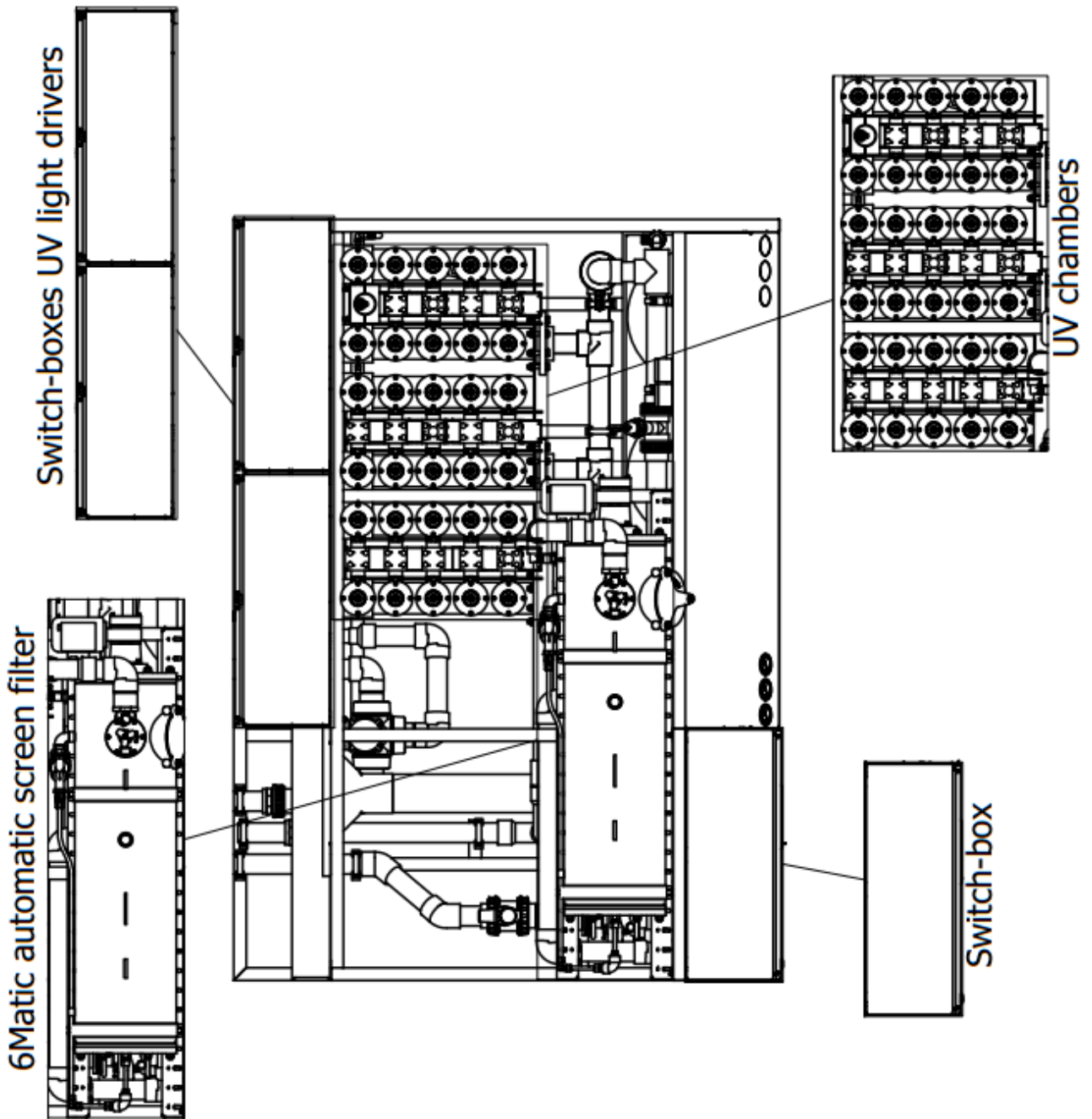


Figure 2 General overview

2.3.1 Switch-boxes UV light drivers

In the UV light drivers switch boxes light drivers are mounted inside that regulate the power supplied to the UV lights inside the UV chambers.

2.3.2 Flow indicator

The flow meter measures the latest flow of the water.

2.3.3 UV chambers

The UV chambers are made of a stainless steel outer shell with an inner shell made of quartz.

NOTICE
THE QUARTZ INNER SHELL IS FRAGILE.
⚠ CAUTION
BEFORE APPLYING MAINTENANCE TO THE UV-CHAMBERS ALWAYS MAKE SURE THAT THE PH VALUE OF THE WATER IS NEUTRAL.

The UV lights are located in de inner shells of the UV chambers.

NOTICE
NEVER TOUCH THE LAMPS WITH BARE HANDS, USE SAFETY GLOVES. ACIDS AND GREASE THAT REMAINS AFTER TOUCHING WITH BARE HANDS WILL EVENTUALLY CAUSE DAMAGE TO THE LAMP.

2.3.4 Switch-box

The Switch-box contains the electrical components that control the functioning of the system. Furthermore on the touchscreen display of the switch-box alarms and/or notification will be displayed. Control settings for the functioning of the system can be adjusted here as well.

2.3.5 Suction line

In the suction line a under pressure is generated by the system pump to generate a water flow.

2.3.6 UMI-6-Matic automatic screen filter

The screen filter keeps dirt that resides in the water from getting in the system. This prevents the dirt particles from blocking the UV light in later stages.

NOTICE
TO GUARANTEE A WELL WORKING FILTER CONSULT THE BASIC INTERVALS IN PARAGRAPH "5.1.3 MAINTENANCE PLANNING".

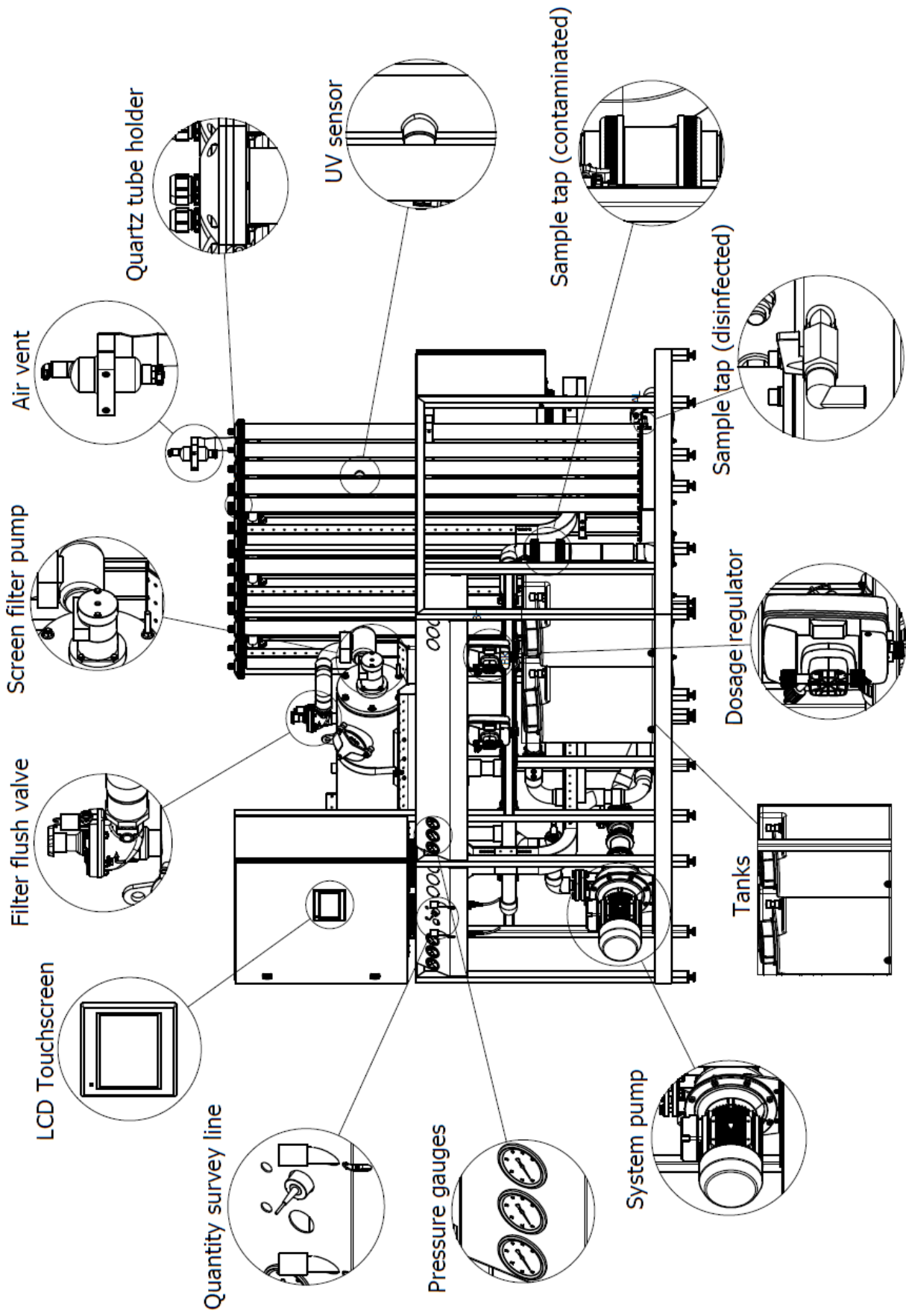


Figure 3 Descriptive parts (Front)

2.3.7 LCD Touchscreen

The human machine interaction is generally done using this LCD Touchscreen. The screen notifies the users of any events happening in relation to the system and gives the user the freedom to change relevant settings of the system. Dealers can adjust the more advanced settings using the same screen.

2.3.8 Filter flush valve

This valve opens if the screen filter wants to start cleaning itself to allow a backflow to be generated.

2.3.9 Filter gear drive

Subsequently with the filter flush valve the controller activates the gear motor to rotate the screens inside the filter generating a backflow that cleans the screens from residual debris.

2.3.10 Air vent

The air vent automatically removes most of the air out of the system to prevent multiple errors shown in paragraph "2.7. Alarms".

2.3.11 Quartz tube holder

The quartz tube holder is used to hold the quartz tube in place to prevent the water from pushing it out of place.

2.3.12 UV sensor

The UV sensor is located in a "immersion sleeve" which is a watertight sleeve that is bolted to the UV chamber. The UV sensor is used to measure the amount of fluency in the chamber allowing the system to regulate its transmission value (T10) to apply the desired UV dosage.

2.3.13 Sample tap (Contaminated)

This tap is used to drain a sample of the contaminated water to determine its properties manually.

2.3.14 Sample tap (Disinfected)

This tap is used to drain a sample of the disinfected water to determine its properties manually. This tap is commonly used for calibrating the UV sensor and the transmission value (T10).

2.3.15 Dosage regulator

The dosage regulator is used for acid and optionally hydrogen peroxide regulation. The dosage regulator for dosing acid is equipped with acid resistant materials. These materials are only resistant to acid concentrations up to 40%. It is advised to use an acid compound of max. 38%.

The dosage pump for hydrogen peroxide is equipped with materials resistant too hydrogen peroxide. These materials are only resistant up to a concentration of max. 30%. Make sure to only use a concentration that does not exceed this limit.

⚠ CAUTION
BEFORE APPLYING MAINTENANCE TO THE DOSAGE REGULATOR FOR ACIDS ALWAYS PUT ON SAFETY GOGGLES AND SAFETY GLOVES.
⚠ CAUTION
NEVER HAVE AN OPEN FLAME PRESENT WHEN APPLYING MAINTENANCE TO THE HYDROGEN PEROXIDE DOSAGE REGULATOR.

2.3.16 Reservoir Tanks

There is a maximum of three reservoir tanks. The righter most tank is most commonly the acid tank storing the acid used by the system also indicated with the ACID label on the tank. The other two tanks are optional depending on the configuration. To determine the contents of the tank notify the labels on the tank.

2.3.17 System Pump

The system pump is controlled using and frequency inverter. This inverter makes sure the correct flow and/or pressure of the pump are achieved. Furthermore a pump house (where the system pump is placed) is outfitted with a temperature sensor to guard the pump from overheating. To measure if the flow of the system is correct a flow meter is also implemented.

NOTICE
THE PUMP MAY NEVER RUN WITHOUT WATER.

2.3.18 Pressure gauges

The pressure gauges display the water pressures on the input and the output of the filter and the general pressure of the water in the system.

2.3.19 Quantity survey line

The quantity survey line measures certain quantities and qualities of the water using a pH probe to measure the pH value of the water and optionally a EC probe to measure the electrical conductivity of the water.

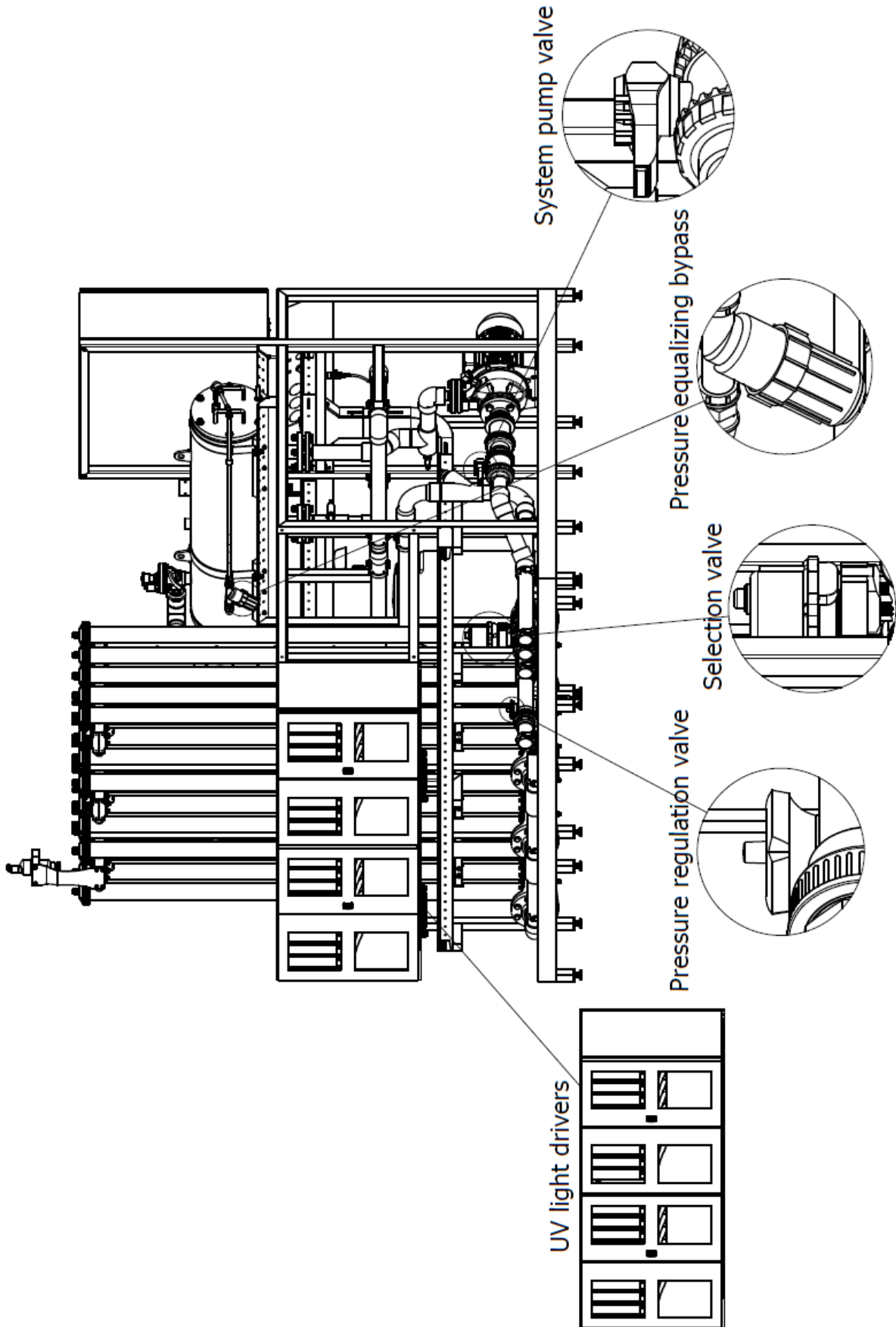


Figure 4 Descriptive parts (Back)

2.3.20 UV light drivers

The UV light drivers are used to regulate the power output of the UV lights to achieve the desired UV dosage.

2.3.21 Pressure regulation valve

The pressure regulator is used to optimize the systems generated pressure.

2.3.22 Selection valve (contaminated / disinfected)

The valve is located in the pressure tube of the system. Standard orientation of this valve is “return to contaminated drain”. When the system is cleaned the valve will be switched to the disinfected drain(disinfection).

2.3.23 Pressure equalizing bypass

Using the pressure equalizing bypass a similar pressure on both sides is required for the backflow of the filter to run smoothly.

2.3.24 System pump valve

This valve is used to disconnect the system pump form the rest of the system to apply maintenance to the system pump or to depressurize the system.

2.4 Technical Data

Table 1 Technical specifications

PARAMETER	UNIT
DEVICE NAME	AQUALUX
DESIGNATION	DISINFECT WATER BY USING UV-LIGHT
TYPE	AGRICULTURAL MACHINE
TECHNICAL LIFE SPAN	10-20 YEARS (DEPENDING ON THE ENVIRONMENT AND MAINTENANCE BY THE USER)
CAPACITY	DEPENDS ON CONFIGURATION(SEE APPENDIX II “CAPACITY REFERENCE TABLE”)
ENERGY CONSUMPTION	DEPENDS ON CONFIGURATION(LABEL IN SWITCH BOX)
PERFORMANCE DATA	DEPENDS ON CONFIGURATION(LABEL IN SWITCH BOX)
CHEMICAL COMPOSITION	STAINLESS STEEL AND COMPOSITES
SUPPLY DATA FOR POWER, GAS, WATER AND OTHER CONSUMABLES	POWER CONSUMPTION: DEPENDS ON CONFIGURATION* OPERATING PRESSURE WATER : 3 BAR (43.5 PSI)
EMISSION OF NOISE AND WASTEWATER	EMISSION OF NOISE = 84DB, NO WASTE WATER

2.5 Product Compliance

This product complies to all relevant European Directives. The Declaration of Conformity can be found in the appendix. The Product is in compliance with:

- DIRECTIVE 2006/42/EG relating to Machinery,
- DIRECTIVE 2014/30/EU relating to electromagnetic compatibility,
- DIRECTIVE 2014/35/EU relating to low voltage appliances.

remotely a user account has to be activated. Contact the dealer for more information.

NOTICE
THE TOUCHSCREEN CAN ONLY BE OPERATED BY USING ONE FINGER AT A TIME. DO NOT USE ANY SHARP OBJECTS, PENCILS AND/OR STYLUS TO OPERATE THE SCREEN TO PREVENT DAMAGE TO THE SCREEN.

2.6 Operating Panels

The user interface of the Aqualux is fully operated with the LCD touchscreen. The Aqualux can also be operated remotely, too operate the Aqualux

2.6.1 Basic Navigation

Every window is provided with basic navigation items. Basic navigation is divided into an upper bar (Figure 5) and a lower bar(Figure 6).



Figure 5 Upper bar

- Home : Brings the user back to unit overview window
- Window name : The window name is displayed in the center of the upper bar. Showing the user what window is open.
- Date/Time : The current date and time are displayed on the right-hand side of the upper bar.



Figure 6 Lower bar

Alarm Indicator : The lower bar blinks red when an alarm is active.

Back : Return to the previously used window.

User Menu : Navigates to the user menu window.

Dealer Menu : Navigates to the dealer menu.

Alarms : Navigates to the alarm window.

2.6.1.1 Screensaver Mode

If the user interface is not used for 15 minutes the LCD touchscreen automatically switches over to its screensaver (Figure 7).

2.6.1.2 Sleep Mode

the LCD touchscreen goes in sleep mode after the screensaver is displayed for 15 minutes generating a black window. The LCD touchscreen wakes up when pressed on any location.



Figure 7 Screensaver screen

2.6.2 Unit Overview

The window unit overview gives the user an overview of the status of the unit.

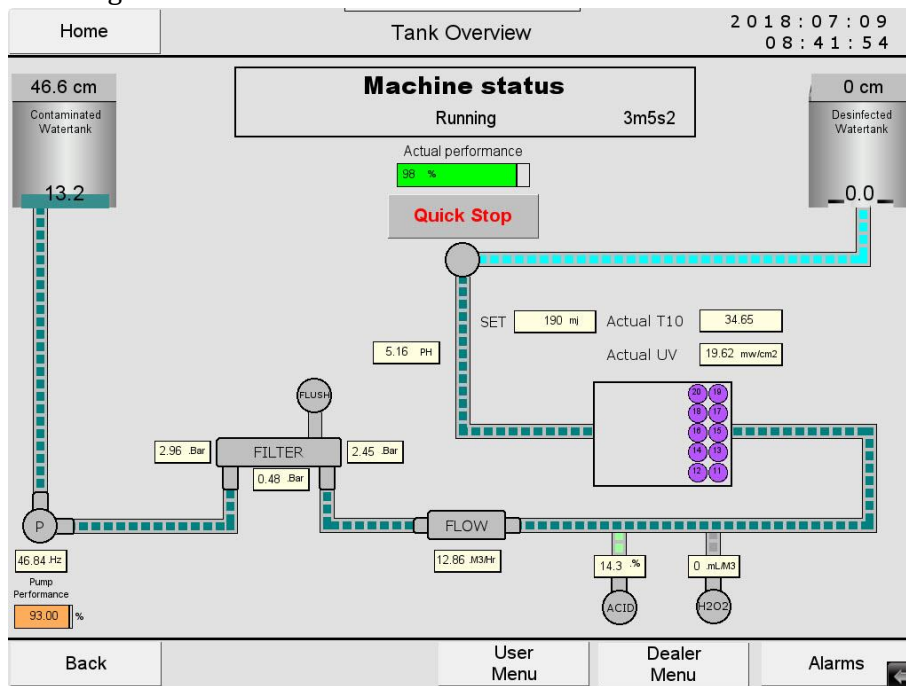


Figure 8 Unit Overview winter

Machine status STATE minutes : seconds

Shows the status of the machine and the amount of time it is has this status.

Actual performance (0 – 100)%

Shows the performance of the machine in percent.

Contaminated water tank height xx.x cm

Shows the height of the water in the water tank.

Contaminated water tank capacity (0 – 100)%

Shows the relative volume of the tank.

Disinfected water tank height xx.x cm

Shows the height of the water in the water tank.

Disinfected water tank capacity (0 – 100)%

Shows the relative volume of the tank.

Freshwater valve (0 – 100)%

Shows the performance of the fresh water valve in percent.

System pump performance (0 – 100)%

Shows the occupation of the system pump.

System pump frequency (0.00 – 50.00) Hz

Shows the frequency the pump is running at.

FILTER pressure IN (2 – 4) bar

Shows the pressure of the coming into the filter.

FILTER pressure difference (0 – 0.5) bar

Shows the pressure difference between the in- and outgoing water.

FILTER pressure OUT (2 – 4) bar

Shows the pressure of the outgoing water.

FLOW (0 – max. flow) m³/hr

Shows the flow of the water in the system in m³/hr.

ACID (0 – 100)%

Shows the performance of the acid valve in percent.

H2O2 (0 – 100)%

Shows the performance of the hydrogen peroxide valve in percent.

UV lights state

Shows the state of the lamps using the following reference chart.

- Drive OK
- Lamp starting
- Lamp On - pre heating
- Lamp On - full power
- Lamp On - power problem
- Lamp / drive error

UV dosage SET (0 – 250) mJ

Shows the set UV dosage in millijoules.

UV dosage T10 (0 – 100)%

Shows the transmission value (T10) of the water.

UV dosage UV (0 – 250) mW/cm²

Shows the dosage of UV light in milliwatts per square centimeter.

pH measurement (0.00 – 14.00) pH

Shows the pH value of the output water.

EC measurement (0.00 – 10.00) EC

Shows the electrical conductivity level of the output water.

2.6.3 User Menu

The user menu is used by the dealer and the user and is secured with a 4 digit login code. The login code can be changed by the user when desired. The default login code is [1234].The login code unlocks the user menu for a couple of minutes before returning to tank overview window.

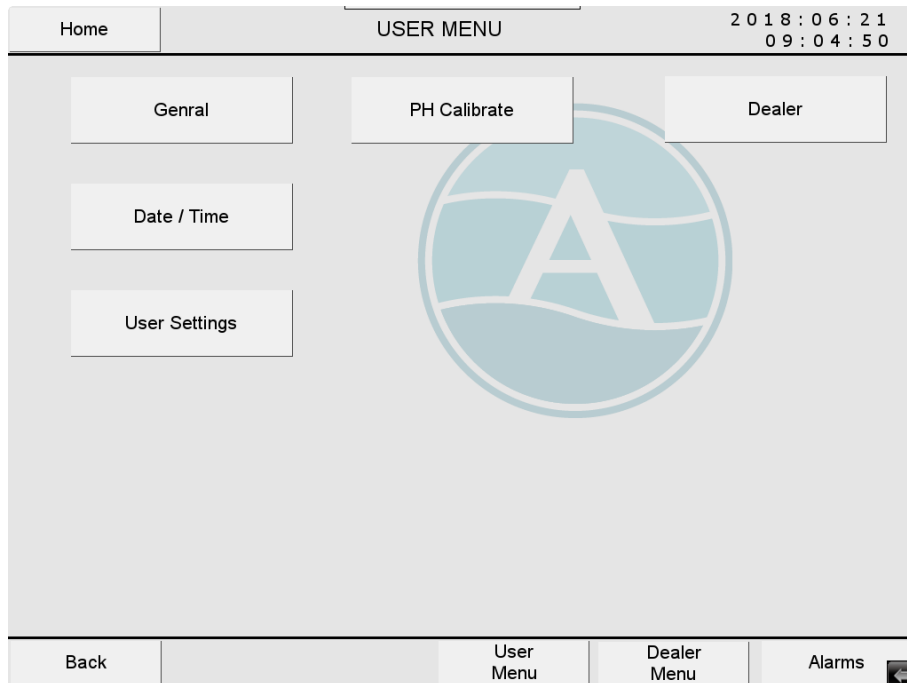


Figure 9 User menu navigation window

2.6.3.1 Login Window

To unlock the user menu :

1. Press on the input field where the login code has to be entered Figure 10).
2. A 'keypad' for user input appears.
3. Type in the correct login code and press [Enter].
4. Press [Confirm User Code].

When the inserted login code is correct the user menu will be displayed on the window (Figure 9).

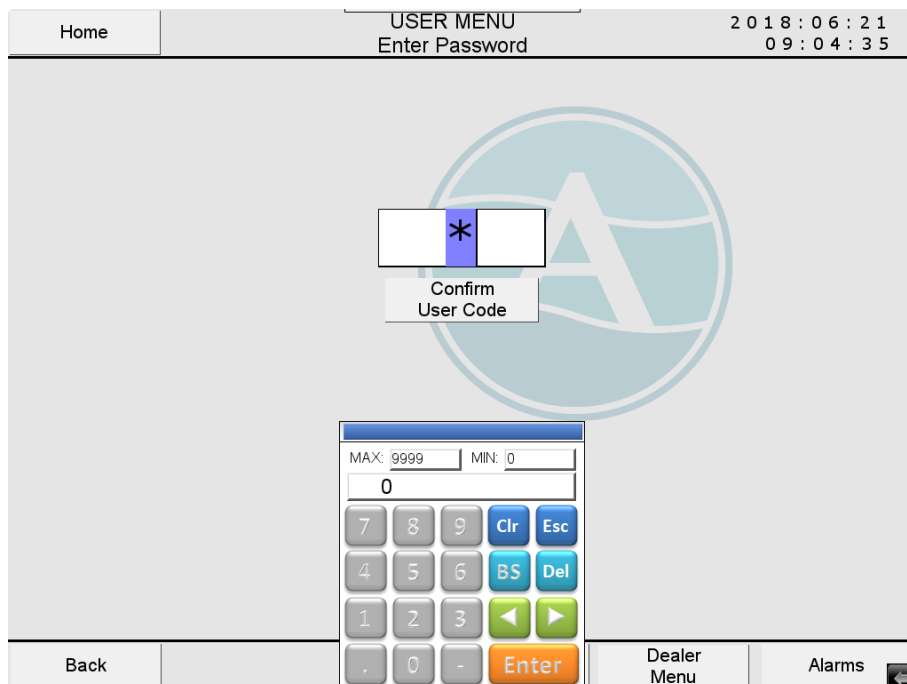


Figure 10 Login window

2.6.3.2 General Information

When the button general is pressed the general info window (Figure 11) will be displayed on the window.

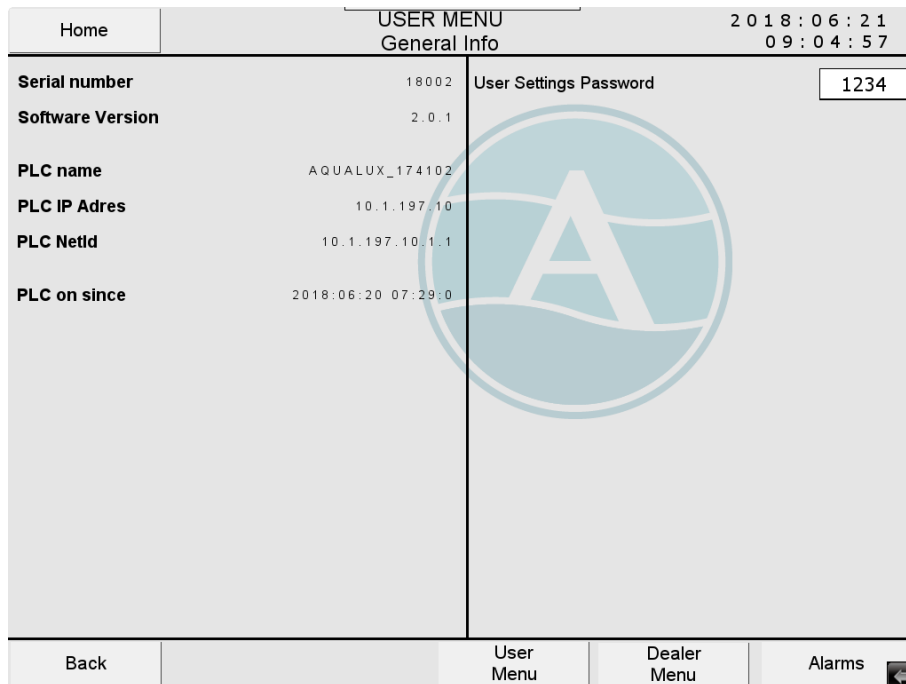


Figure 11 General information window

In Figure 11 the system information is displayed on the left-hand side. On the right there is a possibility to adjust the login code.

2.6.3.3 Date / Time

By pressing the Date/Time button in the user menu the window shown in Figure 12 will be displayed.

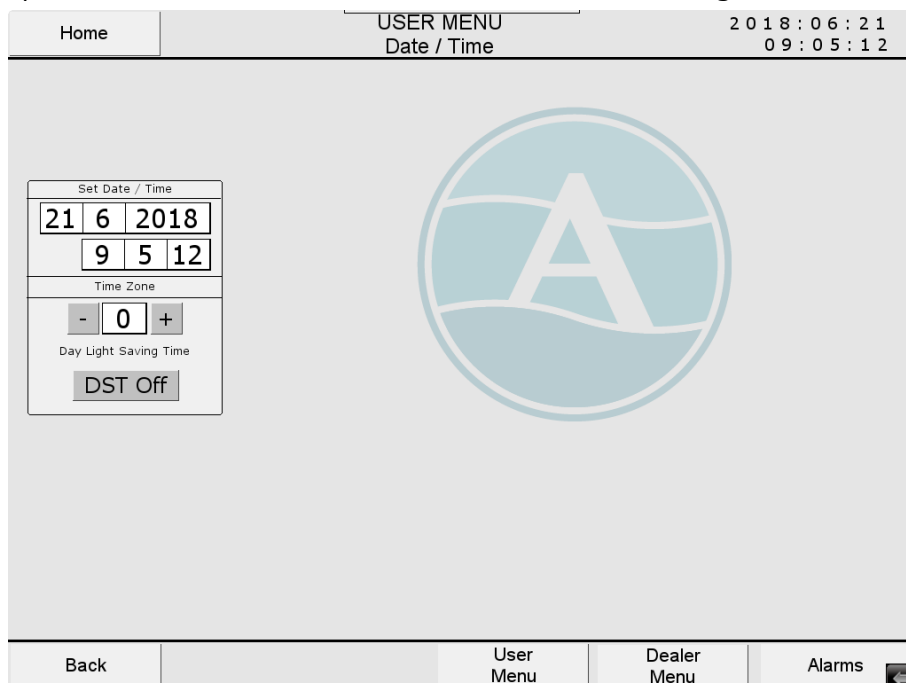


Figure 12 Date/Time window

Set Date *day : month : year*
Adjusts the date.

Set Time *hours : minutes : seconds*
Adjusts the time.

Time zone *+/- xx GMT*
Adjusts the time zone.

Daylight Saving Time(DST) *On/Off*
(De)activates DST.

2.6.3.4 Unit Settings

By pressing unit settings in the user menu the unit settings displayed in Figure 13 will be shown.

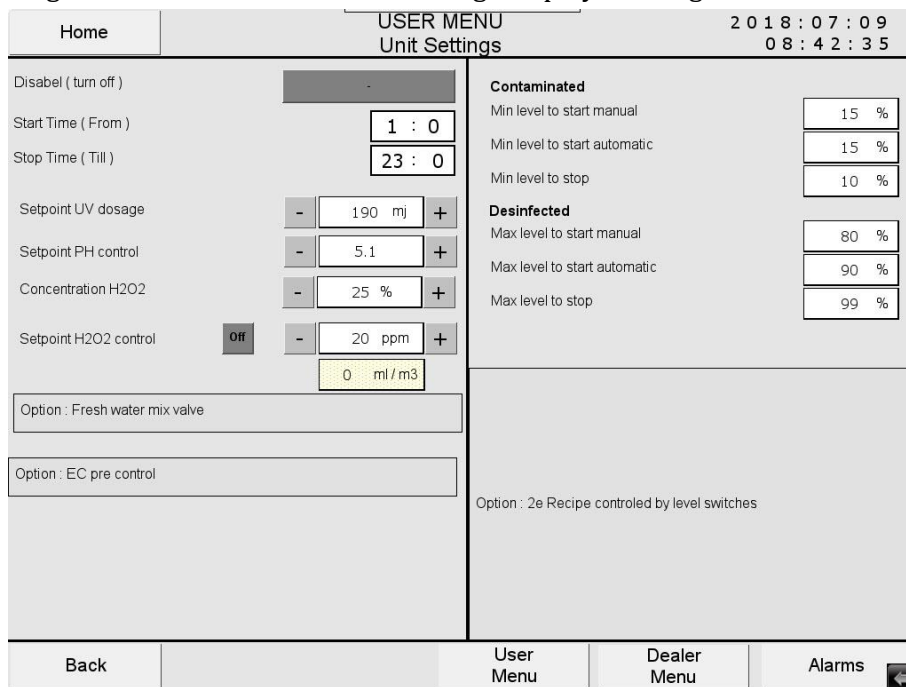


Figure 13 Unit settings window

- Start time (From)** *hours : minutes*
The time the Aqualux starts at.
- Stop time (Till)** *hours : minutes*
The time the Aqualux stops at.
- Setpoint UV dosage** *(80 – 250) mJ/cm2*
The dosage at which the unit has to disinfect.
- Setpoint pH control** *(0 - 14) pH*
The desired pH value of the outgoing water.
- Setpoint clean water mix** *(0 – 100)%*
The desired valve position(only without EC control)
- Setpoint EC control** *(0 – 10) EC*
The desired EC value of the outgoing water (only without clean water blender).
- Setpoint hydrogen peroxide** *(0 – 100) ml/m³*
The desired dosage of hydrogen peroxide in ml/m³

- Min level to start manual** *(0 – 100)%*
Minimal water level required to allow a manual start.
- Min level to start automatic** *(0 – 100)%*
Minimal water level required to start automatically.
- Min level to stop** *(0 – 100)%*
When the water level reaches this height the Aqualux stops.
- Max level to start manual** *(0 – 100)%*
Maximum water level at which a manual start is allowed.
- Max level to start automatic** *(0 – 100)%*
Maximum water level at which the Aqualux starts automatically.
- Max level to stop** *(0 – 100)%*
When the water level reaches this height the Aqualux stops.

2.6.3.5 pH Calibrate

By pressing the PH calibrate in de user menu the PH calibrate window (Figure 14) is shown.

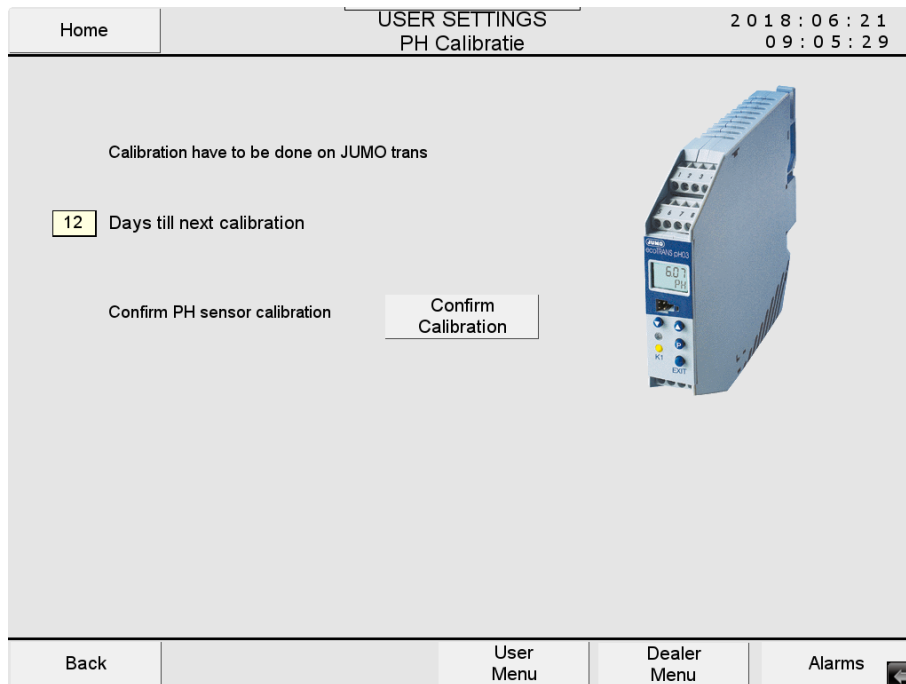


Figure 14 pH calibrate window

This window shows the amount of days until the next pH sensor calibration cycle is required. Check chapter “5. Maintenance” for reference on how to calibrate the sensor.

2.6.4 Dealer Menu

The dealer menu is to be used by the dealer only to adjust more advanced settings. The dealer is able to log in to this menu in the same way as logging in to the user menu but with a code specifically generated for the dealer.

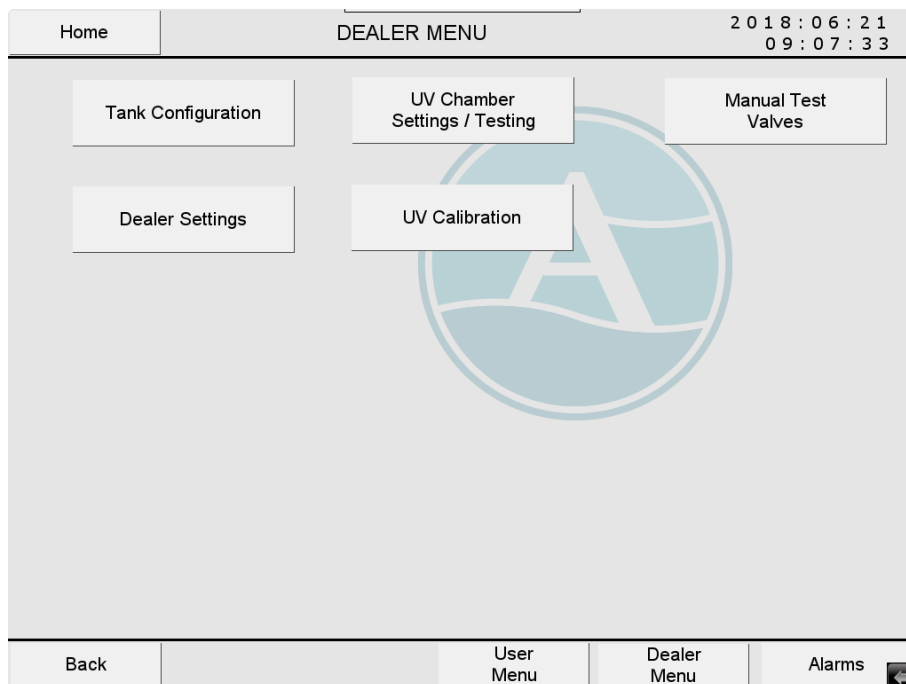


Figure 15 Dealer menu navigation window

2.6.4.1 Tank Configuration

By pressing the tank configuration button in the dealer menu the following window will be shown.

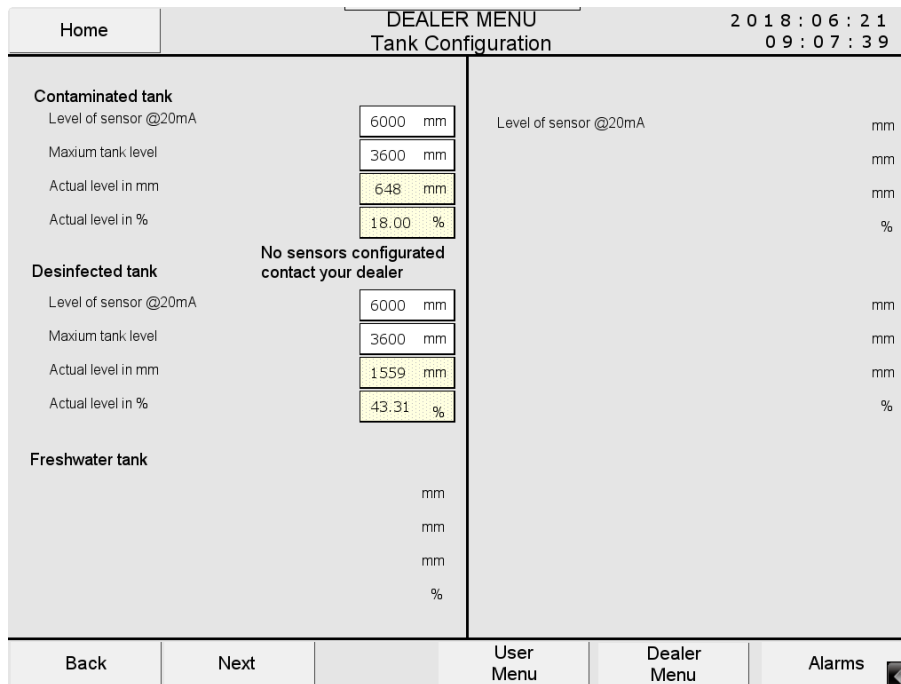


Figure 16 Tank configuration window

- Level of sensor @ 20 mA** xxxx mm
Shows the maximum value in mm for the used sensor.
- Maximum tank level** xxxx mm
Shows the maximum height of the water in the tank.

- Actual level in mm** xxxx mm
The height of the water in the tank in millimeters.
- Actual level in %** (0 – 100)%
The height of the water in the tank in millimeters.

2.6.4.2 UV Chamber Overview

By pressing the UV chamber overview button in the dealer menu the follow window appears. In this overview the dealer can see the numbers of the designated lamps, manually operate each lamp individually and adjust or view certain values.

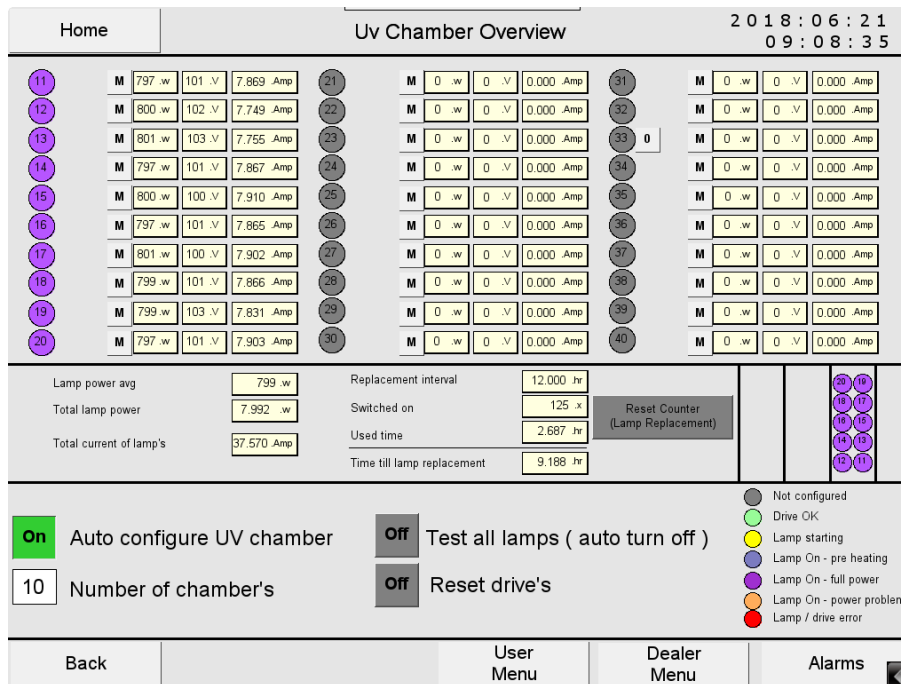


Figure 17 UV chamber overview window

- Lamp power** (0 – 1000) W
The power used by the specific lamp.
- Lamp voltage** (0 – 200) V
The voltage used by the specific lamp.
- Lamp current** (0 – 10) A
The current used by the specific lamp.
- Lamp power average** (0 – 1000) W
The average power in Watts generated used by the UV lamps.
- Total lamp power** (0 – 10000) W
The sum of the power in Watts used by the UV lamps.
- Total current of the lamps** (0 – 10) A
Total current used by the lamp drivers to drive the UV lamps. This value is independent from the displayed current used per UV lamp because a different voltage is used by the drivers.
- Replacement interval** (0 – 12000) hr
The set value for the time it takes for the lamps to be replaced.
- Switched on** (0 – 10000) x
The amount of times the UV lamps have switched off and on.

- Used time** (0-x) hr
The amount of time the current UV lamps are in the system where variable x is the set replacement interval time.
- Time till lamp replacement** (0-x) hr
The amount of time left before the UV lamps need to be replaced where variable x is the set replacement interval time.
- Reset lamp replacement time** On/Off
Resets the used time and switched on counters.
- Auto configure UV chamber** On/Off
Tells the lamp drivers to automatically turn a set amount of UV lamps on or off when this setting is turned on.
- Number of chambers** (0 – 30)
Displays the amount of available UV chambers.
- Test all lamps (auto turn off)** On/Off
Turns on all lamps to determine if there are any defect lamps. Automatically turns itself off.
- Reset drives** On/Off
Resets the state of the lamp drives when turned on. Automatically turns itself off.

2.6.4.3 Manual Mode

When the manual mode button in the dealer menu is pressed the following window is displayed. In this window the Aqualux can be operated manually. When the Aqualux has been disabled the manual control allowed light will turn green.

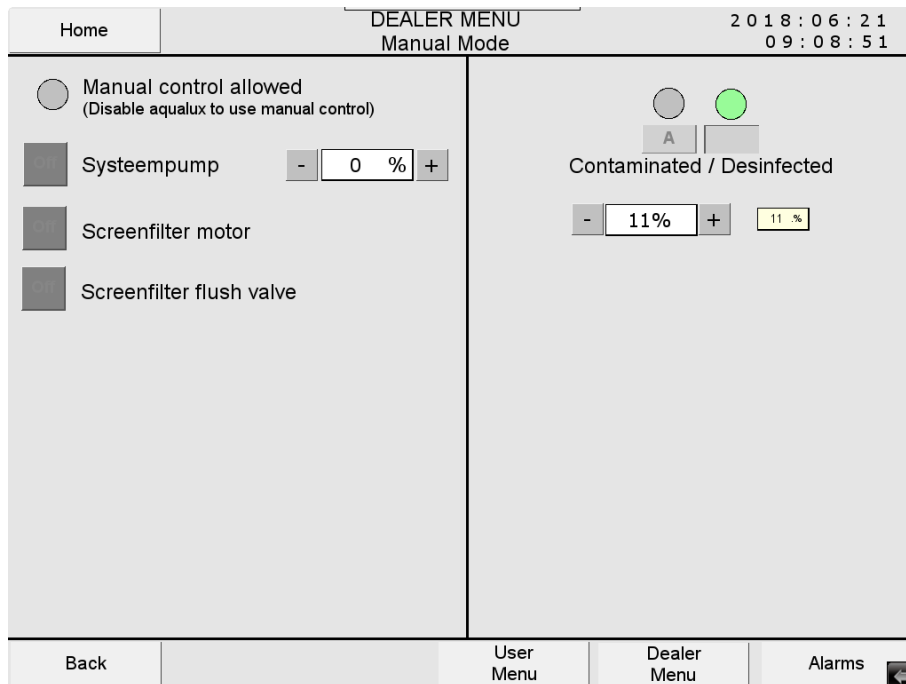


Figure 18 Manual mode window

System pump	On/Off
Turns the system pump on or off.	
System pump performance	(0 – 100)%
Sets the performance of the system pump.	
Screen filter motor	On/Off
Turns the screen filter motor on or off.	
Screen filter flush valve	On/Off
Turns the screen filter flush valve on or off.	

Selection valve	Contaminated/Desinfected
Changes the selection valve from flowing to the contaminated tank or disinfected tank.	
Freshwater valve	(0 – 100)%
The set amount of percentage the fresh water valve needs to be opened and the actual amount its open.	

2.6.4.4 Settings -1-

When the button dealer settings is pressed the follow window will be displayed. In this window the dealer can adjust certain setpoints and navigate to the second settings menu.

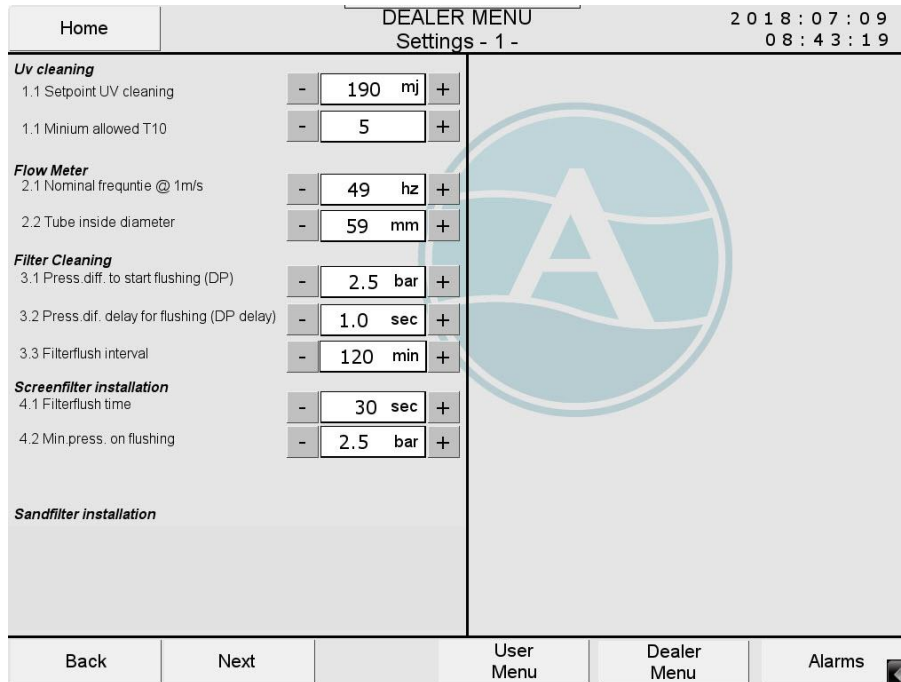


Figure 19 Settings - 1 - window

1.1 Setpoint UV cleaning (0 – 250)mj

The setpoint for UV dosage applied to the water in millijoules.

2.1 Nominal frequency @ 1m/s (0 – 50)Hz

The nominal frequency at a flow of 1m/s in Hertz.

2.2 Tube inside diameter x mm

The inside diameter of the tube the flow meter is mounted at.

3.1 Press. Diff. to start flushing(DP) x bar

The pressure difference between the input and output of the filter required to start flushing the filter.

3.2 Press. Diff. delay for flushing (DP delay) x sec

The time the pressure difference between the input and output of the filter has to be a set value before flushing.

3.3 Filter flush interval x min

Time between filter flushes if pressure difference to start flushing is not reached in this interval.

4.1 Filter flush time x sec

The time it takes for the filter flush to clean the screen filter.

4.2 Min. press. On flushing x bar

Minimal pressure required to start flushing the screen filter.

2.6.4.5 Settings -2-

By pressing next on the settings – 1 – menu the following window will be displayed on the window.

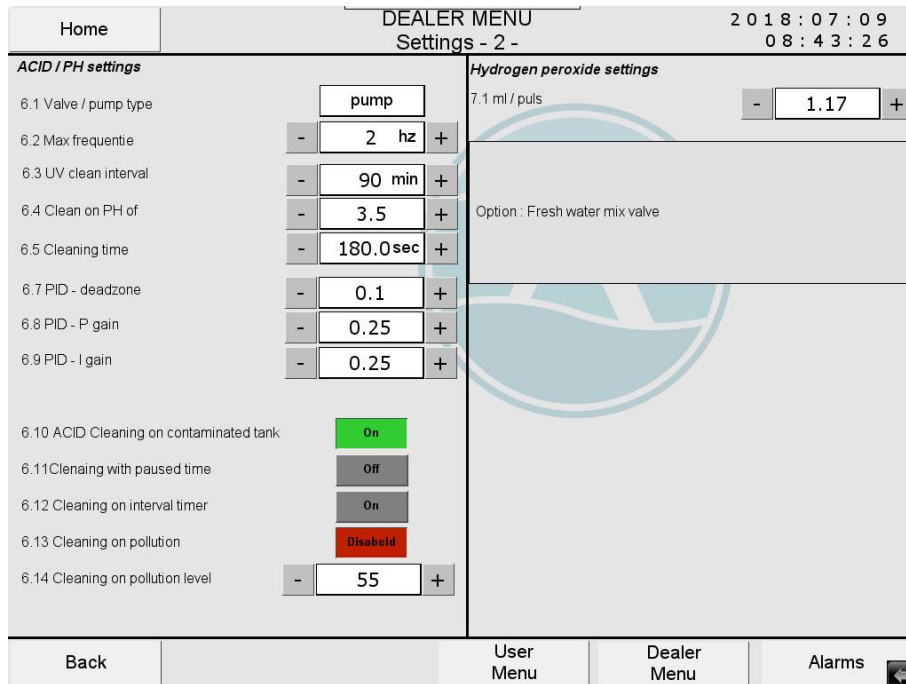


Figure 20 Settings - 2 - window

6.1 Valve / pump type	<i>valve/pump</i>
Shows the designated type used to dose acid.	
6.2 Max. frequency	<i>(0 – 10) Hz</i>
Sets the maximum frequency the acid pump pulsates at.	
6.3 UV clean interval	<i>x minutes</i>
The interval between cleaning sessions for the UV chambers.	
6.4 Clean when pH equals	<i>x pH</i>
The threshold pH value the UV clean sequence starts cleaning the UV chambers.	
6.5 Cleaning time	<i>x sec</i>
The time interval the UV chambers are cleaned.	
6.6 PID – dead zone	<i>x</i>
The maximum offset from the set	
6.7 PID – P gain	<i>x</i>
The proportional gain value of the acid pump.	
6.8 PID – I gain	<i>x</i>
The integral gain value of the acid pump.	

6.9 PID – D gain	<i>x</i>
The differential gain value of the acid pump.	
6.10 Cleaning on contaminated tank	<i>On/Off</i>
Turns cleaning on contaminated tank on and off.	
6.11 Cleaning with paused time	<i>On/Off</i>
Turns cleaning with paused time on and off.	
6.12 Cleaning on interval timer	<i>On/Off</i>
Turns cleaning on interval timer on and off.	
6.13 Cleaning on pollution	<i>On/Off</i>
Turns cleaning on pollution on and off.	
6.14 Cleaning on pollution level	<i>(0 – 100)%</i>
The setpoint of pollution when to start cleaning.	
7.1 Milliliters added per pulse	<i>x ml/pulse</i>
The amount of milliliters per pulse added by the regulator.	
8.1 Dead zone of valve	<i>(0 – 100)%</i>
The hysteresis allowed in the performance of the valve.	
8.2 Valve run time	<i>x sec</i>
The time the valve runs	

2.6.4.6 UV Calibration

When the UV calibration button in the dealer menu is pressed the following window is displayed. In this window the Aqualux UV setting can be calibrated.

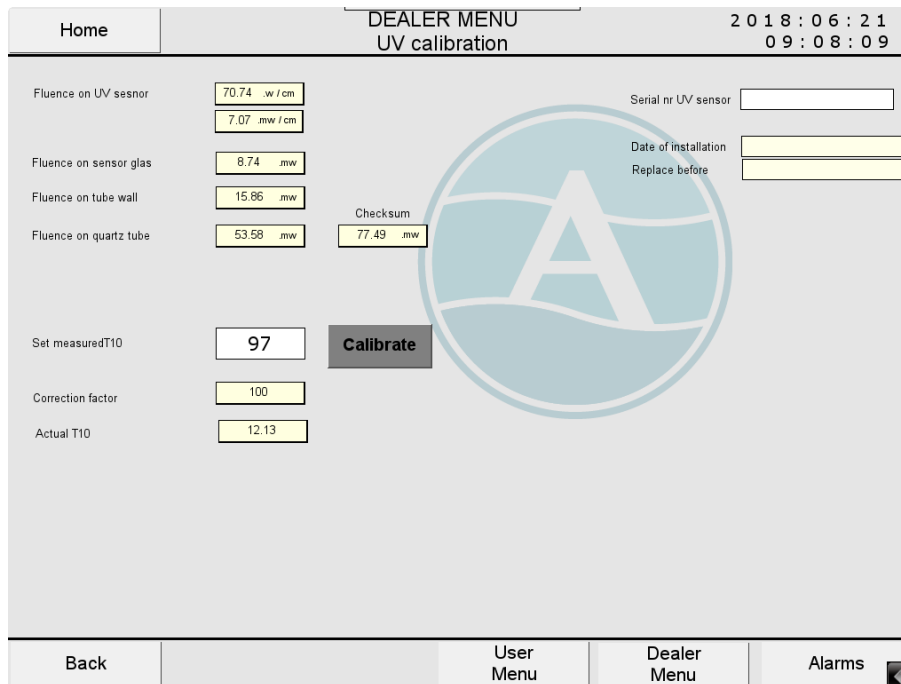


Figure 21 UV Calibration window

Fluency on UV sensor (0 – 10) W/cm²
The fluency in milliwatts measured on the UV sensor.

Fluency on sensor glass (0 – 100) mW
The fluency in milliwatts measured on the sensor glass.

Fluency on tube wall (0 – 100) mW
The fluency in milliwatts measured on the tube wall.

Fluency on quartz tube (0 – 100) mW
The fluency in milliwatts measured on the quartz tube.

Checksum (0 – 100) mW
Checksum is used to check the current power output with the theoretically calculated power output.

Set measured T10 (0 – 100)%
The manually measured transmission value (T10) of the sampled water.

Correction factor (0 – 100)
Displays the factor the actual transmission value (T10) is corrected with to reach the set measured T10 value.

Actual T10 (0 – 100)
The transmission value (T10) that the sensor is measuring.

Serial Nr. UV sensor xxxxxx
The serial number of the used UV sensor.

Date of installation day : month : year
The date the UV sensor is installed at.

Replace before day : month : year
Shows the date when the UV sensor has to be replaced.

2.7 Explanation of Signals

The system is equipped with multiple events and alarms. The user is required to know what each alarm and event means and how to take corrective actions to remedy the situation. For alarms that can cause hazardous situations the system will stop disinfecting. In all other cases the alarm or event will be generated while disinfection continues. In these cases the user is expected to take the appropriate action to prevent the alarm from repeating itself.

2.7.1 Possible Events and Alarms

When a notification and/or alarm is generated the lower bar on the window will start blinking in red. When the alarm and/or notification is resolved the notification on the display will disappear after a few minutes. To resolve the following alarms and events named in this subparagraph see chapter "6. Troubleshooting".

2.7.1.1 Alarms

System Pump Temp Not Ok;
System Pump No Flow Detected;
System Pump Drive Alarm;
System Pump Drive Fault;
Acid Tank Level To Low;
Hydrogen Peroxide Tank Level To Low (Optional);
UV Chamber Temp Not Ok;
UV Sensor Replacement Required;
UV Lamp Driver Error;
UV Sensor No Reliable Measurement;
UV Sensor T10 Can Not Be Defined;
UV Lamps Turned On And No Flow;
Quick-Stop Pressed;
pH Sensor Calibration Required;
Screen Filter Motor Has Alarm;
Screen Filter Flush Pressure Too Low.

2.7.1.2 Events

Working hours of the lights exceeded ;
Acid tank empty;
Hydrogen peroxide tank empty.

3 SAFETY INSTRUCTIONS

⚠ WARNING

READ AND UNDERSTAND THIS MANUAL AND ITS SAFETY INSTRUCTIONS BEFORE USING THIS PRODUCT. FAILURE TO DO SO CAN RESULT IN SERIOUS INJURY AND LOSS OF ANY RIGHT TO CLAIM WARRANTY.

3.1 How to Use the Product Safely

3.1.1 Safety information for vulnerable people

- This appliance may only be used by operators that have been properly educated in all the functions, risks and parts of the Aqualux,
- Do not let children play with the Aqualux,
- Cleaning, operation and maintenance may not be done by individuals with reduced physical, sensory or mental capabilities and / or lack of experience and knowledge.

3.1.2 Technical lifespan

If maintenance is not provided as specified in chapter “5 Maintenance” the technical lifespan of the Aqualux will be reduced depending on the environment of the Aqualux and frequency of use.

NOTICE

MAKE SURE TO DRAIN THE UNIT AND THE PUMP FROM WATER WHEN TEMPERATURES ARE BELOW 0 DEGREES CELSIUS AND THE UNIT IS NOT OPERATING.

3.1.3 Safety information related to the intended use and reasonably foreseeable misuse

- Do not modify any parts of the machine without approval of the manufacturer,
- The machine is intended to be used to disinfect water,
- Do not apply maintenance to the system without wearing the appropriate personal protective equipment.

3.1.4 Maintenance safety information

- <Rotate the power switch to “0”> before starting maintenance operations.
- Use the tools and protective equipment as specified.

3.1.5 Cleaning safety information

- <Rotate the power switch to “0”> before starting cleaning operations.






3.2 Potential Health Consequences

The Aqualux is essentially harmless. The parts of the Aqualux that can be hazardous are the acid in the system and optionally the hydrogen peroxide in combination with open fire.

3.3 Personal Protective Equipment

The personal protective equipment (PPE) symbols that can be present on the Aqualux are as shown in Table 2.

Table 2 Personal protective symbols and instruction

PPE	INSTRUCTION
	WEAR EYE PROTECTION
	OPAQUE EYE PROTECTION MUST BE WORN
	WEAR EAR PROTECTION
	WEAR PROTECTIVE GLOVES
	WEAR SAFETY FOOTWEAR

3.4 Safety Symbols

The safety symbols that can be present on the Aqualux are as shown in Table 3.

Table 3 Safety symbols and instructions

PPE	INSTRUCTION
	REFER TO INSTRUCTION MANUAL/BOOKLET
	GENERAL MANDATORY ACTION SIGN
	DISCONNECT BEFORE CARRYING OUT MAINTENANCE OR REPAIR
	WASH YOUR HANDS
	NO OPEN FLAME; FIRE, OPEN IGNITION SOURCE AND SMOKING PROHIBITED
	NO SMOKING
	GENERAL WARNING
	WARNING; EXPLOSIVE MATERIAL
	WARNING; NON-IONIZING RADIATION
	WARNING; OPTICAL RADIATION
	WARNING; OXIDIZING SUBSTANCE
	WARNING; HOT SURFACE
	WARNING; SLIPPERY SURFACE
	WARNING; ELECTRICITY
	WARNING; AUTOMATIC START-UP
	WARNING; CORROSIVE SUBSTANCE

3.5 Specification of Tools to be Used

In Table 4 the minimum tools that are required during installation and commissioning of the Aqualux are displayed.

Table 4 Tools to be Used

AMOUNT	TOOL
3	PERSONAL PROTECTIVE EQUIPMENT SET
1	TAPE MEASURE 5 METERS
3	MARKER
2	UTILITY KNIFE WITH SPARE BLADES
1	ALUMINIUM LEVEL 120 MM
1	ALUMINIUM LEVEL 300 MM
1	FINE TOOTHED PVC HANDSAW
1	FLATHEAD SCREWDRIVERS SET
1	PHILLIPS HEAD SCREWDRIVERS SET
1	SOLDERING IRON
1	WIRE STRIPPERS
1	COMBINATION PLIERS
1	WIRE CUTTER
1	LONG NOSE PLIERS
2	COMBINATION WRENCH SET 8 UP TO AND INCLUDING 30
1	ALUMINUM STEP LADDER
1	HAMMER 300 GRAM
2	HEXAGONAL WRENCH SET WITH AT LEAST WRENCH 4 AND 5
1	1 LITER PVC-C GLUE
1	1 LITER PVC-C CLEANER
1	BOX OF CLEANING CLOTHS
1	LAMEL DISC 125 MM
1	CORDLESS RECIPROCATING SAW
1	REVERSIBLE CHAIN PIPE WRENCH
1	EC MEASUREMENT KIT
1	PH MEASUREMENT KIT
1	T10 MEASUREMENT KIT

4 OPERATION

4.1 How to Use the Machinery

4.1.1 Operational environment

The operational environment of the Aqualux must have a temperature above 0 degrees Celsius and a hygienic environment.

4.1.2 Manual/Automatic operation

The Aqualux only operates automatically. The speed of the flow and pressure are controlled by the operator (within certain limits). To start and stop de Aqualux consult paragraph "4.1.3 Starting/Stopping the product operation".

4.1.3 Starting/Stopping the product's operation

Starting the Aqualux:

1. Make sure nobody is touching the Aqualux,
2. <Turn the power switch to "1">,
3. <Press the start button>,
4. Notice if the Aqualux starts operation.

Stopping the Aqualux:

1. <Press the stop button>,
2. Make sure Aqualux stops running,
3. <Turn the power switch to "0">,

4.1.4 Checks before starting the product

To prevent damage to the machine and operators the Aqualux has to be inspected according to the inspection planning in paragraph "5.2 How to Inspect the Product". Also make sure the machine has no alarms and/or events displayed on the screen before leaving the machine.

4.2 What to Do in Emergency and Exceptional Situations

4.2.1 Emergency Situation

In case of an emergency situation:

1. <Turn the power switch to "0">.
2. Determine if the emergency situation caused damage to the machine or injured a user. If nobody is injured skip the next step.
3. If an user is injured help him/her and/or call for a qualified person to help him/her.
4. Do a full inspection of the machine to make sure the machine has not taken any damage and is functioning properly. If the machine suffered damage refer to chapter "5. Maintenance" for reparation.

4.2.2 Exceptional Situations

In case of an Exceptional/Dangerous situation:

1. Notify all the workers to stop working.
2. Turn off the power supply to the Aqualux.
3. Determine if all the workers and the Aqualux are safe.

4.3 Optional modules

4.3.1 EC-sensor

The EC-sensor is used to measure the electrical conductivity of the water coming out of the Aqualux.

4.3.2 Freshwater mix valve

The freshwater mix valve allows the Aqualux to automatically add fresh water to the contaminated water.

4.3.3 EC-control

The EC-control module allows the Aqualux to control the electrical conductivity of the water going through the Aqualux by combining the two modules named above. This is realized by measuring the EC value of the water going out of the system and controlling the amount the clean water the clean water blender adds to the system.

4.3.4 Extra recipes

This module allows the user to set more than one recipe for the Aqualux up to three recipes.

4.3.5 Water tank measurements

This module can be used for the contaminated, disinfected and fresh water tank and measures the amount of water left in the tank and signals the user if this level gets too high or low.

4.3.6 Hydrogen peroxide

Hydrogen peroxide can be used to further disinfect the water coming out of the system and decrease the amount of fertilizer in the water

5 MAINTENANCE

⚠ WARNING

IF MAINTENANCE IS EXECUTED BY UNQUALIFIED AND UNEDUCATED USERS WARRANTY WILL BE VOIDED.

⚠ WARNING

WHEN EXECUTING MAINTENANCE TASKS MAKE SURE THE AQUALUX CAN NOT TURN ON.

5.1 How to Maintain the Product

The maintenance can be done by the user of the product or the company responsible for installing the system.

5.1.1 Product maintenance by (U)sers

Some of the tasks in subparagraph “5.1.3 How to Maintain the Aqualux” can be executed by the user. In this subparagraph the designated procedures for each maintenance task will be displayed.

5.1.1.1 Cleaning, disinfecting and rinsing

The Aqualux has to be cleaned according to the following plan:

Table 5 Cleaning plan

TASK	INTERVAL
CLEAN RING FILTER	Weekly
RINSE THE UNIT AND ENVIRONMENT	Weekly
ACTIVATE RINSEVALVE	Monthly
CLEAN FLOW INDICATORS	Monthly
CLEAN THE VENTURI	Monthly
CLEAN NON-RETURN VALVES	Monthly
CLEAN EC AND PH SENSOR(S)	Monthly
CLEAN SCREEN FILTER	Every 6 months
CLEAN VENTILATION FILTERS OF THE CONTROL CABINET	Every 6 months
CLEAN MEASURING CUP	Every 6 months
CLEAN SENSOR HOUSING	Every 6 months
CLEAN THE PADDLE WHEEL OF THE FLOW METER	Every 6 months
CLEAN QUARTER TUBES	Annually

5.1.1.2 Installing the pH sensor

To calibrate the pH-sensor:

1. Stop the operation.
2. Locate the JUMO interface (Located in the switch-box).

3. Locate the pH probe indicated by the red oval in Figure 22 or indicated by the blue dot on the panel.
4. <Remove the PVC ring by turning it counter clockwise>.
5. <Remove the probe pulling the blue synthetic with a clockwise motion>.
6. <Clean the probe with water and cloth>.

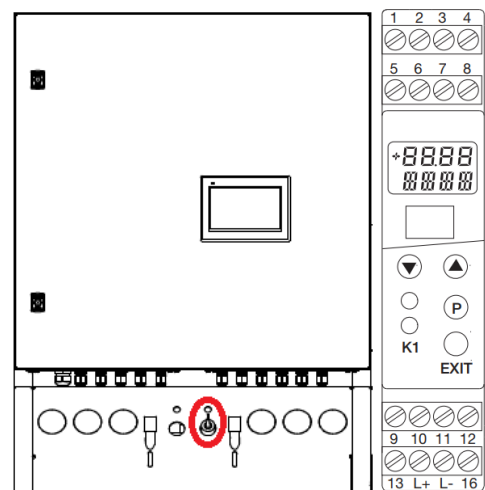


Figure 22 pH probe location (left) and JUMO interface (right)

NOTICE

DO NOT USE ANY CLEANING DETERGENTS AND / OR CHEMICAL DETERGENTS!

7. Follow the calibration process of Table 6.
8. <Reinsert the pH probe in the quantity survey line>.
9. <Confirm calibration on the display of the Aqualux>, this resets the alarm.

To replace the pH sensor(s):

Follow the instructions of “To calibrate the pH sensor(s)” but instead of calibrating the old pH probe calibrate the new probe.

Table 6 pH calibration process

<p>START</p>	<p>7.00 PH</p>	<p><Hold P for 3 seconds></p>
<p>1</p>	<p>USER</p>	<p>USER appears on the display, <press ▼> until CALIB appears on the display then <press P>.</p>
<p>2</p>	<p>110 CODE</p>	<p>The display shows a blinking 0, <use ▼ ▲> buttons to navigate to CODE 110 and <press P>.</p>
<p>3</p>	<p>CAL 2-PT</p>	<p>Choose "2-pt" and <press P>.</p>
<p>4</p>	<p>25.0 °C</p>	<p><Enter the temperature of the calibration liquid>.</p>
<p>5</p>	<p>6.57 REF</p>	<p><Put the sensor in the PH7 liquid> and wait until the measured value stabilizes, then <press P>.</p>
<p>6</p>	<p>6.57 REF</p>	<p>The value starts blinking. If the measured value deviates from the actual value this step allows the user to correct the value. To confirm <press P>.</p>
<p>7</p>	<p>4.12 REF 2</p>	<p><Put the sensor in the PH4 liquid> and wait until the measured value stabilizes, then <press P>.</p>
<p>8</p>	<p>4.12 REF 2</p>	<p>The value starts blinking. If the measured value deviates from the actual value this step allows the user to correct the value. To confirm <press P>.</p>
<p>END</p>	<p>7.03 99.3</p>	<p>When the calibration process is completed the calculated deviation will be displayed. To confirm <press P></p>

5.1.1.3 Lubricate turning components

To lubricate turning components, reference the manual for the screen filter and the system pump in the appendix on how to lubricate these components.

5.1.1.4 Rinse UV sensor holder(s)

NOTICE

CLEAN THE SENSOR HOLDER WITH A DUST CLOTH. NEVER USE A WET CLOTH OR PAPER TOWEL.

To rinse the UV sensor holder(s):

1. <Turn the power switch to “0”>,
2. Remove all the water from the Aqualux,
3. Turn the sensor tightening bolt counterclockwise to remove it,
4. Take out the UV sensor,
5. Clean the sensor holder with a dust cloth,
6. Mount everything back together.

5.1.1.5 Replace ventilation filter(s) of the switch-boxes

To replace the ventilation filter(s) of the switch-boxes:

1. <Turn the power switch to “0”>,
2. Open the ventilation filter housing,
3. Remove the ventilation filter from the housing,
4. Clean the housing with a vacuum cleaner,
5. Replace the ventilation filter with a new ventilation filter,
6. Close the ventilation filter housing.

5.1.1.6 Replace the quartz tubes

NOTICE

WEAR SAFETY GLOVES TO PREVENT DAMAGE TO THE UV LIGHTS.

To replace the quartz tubes:

1. <Turn the power switch to “0”>,
2. Remove all the water from the Aqualux,
3. Pull the UV light out of the chamber,
4. Disconnect the UV light from the connector,
5. Remove the UV light out of the quartz tube chamber or carefully drop it into the chamber,
6. Remove the blue cap by turning the four bolts counterclockwise,
7. Remove the springs and white cap,

8. Remove the last four bolts (they can be mounted very tightly), lose the ones that are easier to turn first,
9. Replace the O-ring and the quartz tube,
10. Mount everything back together, make sure to screw the bolts back in crosswise order and add assembly grease to the bolts.

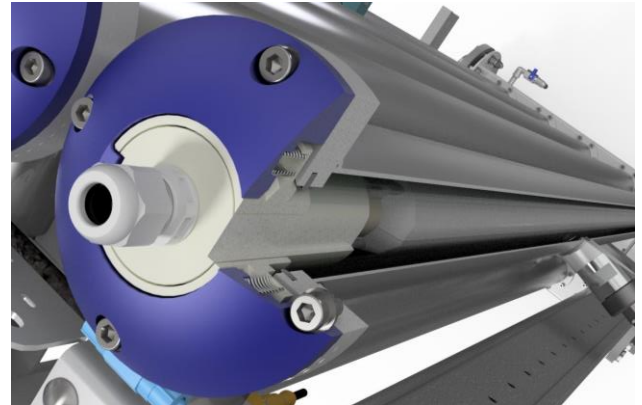


Figure 23 UV light chamber segment view

5.1.2 Product maintenance by (D)ealers

Some of the tasks in subparagraph “5.1.3 How to Maintain the Aqualux” need to be executed by a specialist. This can be a representative of Artechno or a dealer. To ensure the safety during maintenance operations of the machine notify Artechno or a dealer to perform maintenance when specified in this manual.

5.1.2.1 Replace the UV-sensor(s)

To replace the UV-sensor(s):

1. <Turn the power switch to “0”>,
2. Remove all the water from the Aqualux,
3. Turn the sensor tightening bolt, counterclockwise to remove it.
4. Take out the UV sensor and disconnect it from the cable,
5. Clean the sensor holder with a cleaning cloth or paper towel,
6. Calibrate the new UV sensor,
7. Mount everything back together,
8. Navigate to the UV Calibration menu of the dealer menu using the touchscreen display,
9. Enter the serial number of the new UV sensor,
10. Enter the date of installation,
11. Check the date the new UV sensor has to be replaced at.

5.1.2.2 Replace the UV lights

To replace the UV lights follow the instructions of “5.1.1.6 Replace the quartz tubes” up until step 5 and replace the UV light with a new light.

5.1.3 How to Maintain the Aqualux

NOTICE

MAKE SURE TO DRAIN THE AQUALUX AND THE PUMP FROM WATER WHEN TEMPERATURES ARE BELOW 0 DEGREES CELSIUS AND THE AQUALUX IS NOT OPERATING.

Maintenance tasks shall be done according to the following plan:

Table 7 Maintenance planning

TASK	INTERVAL	TO BE EXECUTED BY (U=USER, D=DEALER)
CALIBRATE THE PH SENSOR(S)	Every Trimester	U or D
CALIBRATE THE EC SENSOR(S)	Every Trimester	D
LUBRICATE TURNING COMPONENTS	Every Trimester	U or D
REPLACE THE UV SENSOR(S)	Annually	D
RINSE UV SENSOR HOLDER(S)	Annually	U or D
REPLACE VENTILATION FILTER(S) OF THE SWITCH-BOXES	Annually	U or D
SERVICE THE 6MATIC FILTER*	Annually	D
REPLACE UV LIGHTS	12000 working hours	D
REPLACE QUARTZ TUBES	24000 working hours	U or D
REPLACE EC OR PH SENSOR(S)	When not calibratable	D

*Reference the corresponding user manual for more information.

5.1.4 How to Inspect the Aqualux

NOTICE

WHEN CHECKING THE POLLUTION OF THE QUARTZ TUBES MAKE SURE TO WEAR SAFETY GLOVES AND DO NOT TOUCH THE UV LAMPS WITH BARE HANDS TO AVOID DAMAGING THEM.

The Aqualux will be inspected according to the plan displayed in Table 8 .

Table 8 Inspection planning

TASK	INTERVAL	ACTION
CHECK LEVEL OF ACID TANK	2 times a week	Check the level of acid in the acid tank. Refill when required.
CHECK LEVEL OF HYDROGEN PEROXIDE TANK	2 times a week	Check the level of hydrogen peroxide tank in the hydrogen peroxide tank. Refill when required.
CHECK PRESSURE DIFFERENCE BETWEEN MANOMETERS OF THE FILTER	Weekly	Check the pressure difference between the manometers. When this exceeds the set value and the filter flush valve will not open contact your dealer.
CHECK EC AND PH VALUE	Monthly	Check if the value of the EC and PH is correct. If the value is incorrect calibrate or replace the sensor.
CHECK THE AQUALUX FOR LEAKAGES	Monthly	Check the Aqualux for leakages. If any leakages are found close them. For leakages located at connection points tighten the connection points. For leakages on the tubing close them with adequate materials.
CHECK THE SYSTEM PUMP PRESSURE	Monthly	Check the pressure of the water before entering the filter.
CHECK THE MOTOR PROTECTION SWITCH	Every 6 months	Check if the motor protection switch is not activated and there is no difference in values on the different phases of the motor.
CHECK COATING OF THE UMI-6-MATIC	Every 6 months	Check if the coating of the UMI-6-Matic has damage. If damaged recoat the UMI-6-Matic.
MEASURE THE CURRENT USED BY THE SWITCH BOX(ES) AND MOTOR COILS OF THE PUMP	Every 6 months	Do a measurement of the current used by the switch box(es) to check the internal resistance of the switch box(es).
CHECK FOR SLUDGE IN THE HOSE OF THE ACID PUMP	Every 6 months	Drain and turn off the Aqualux and loosen the hose connected to the acid pump. Use some clean water to rinse the tubing if there is sludge inside.
CHECK FOR AIR INGRESS AT THE PRESSURE PUMP AND SUCTION LINE	Every 6 months	Spray some soap mixed with water on the suction lines tube connection points to determine if and where air enters the suction line.
CHECK FOR POLLUTION OF THE QUARTZ TUBES	Every 6 months	Turn off the machine and use a hex wrench set to take out and check each individual quartz tube for pollution. If necessary clean them with a clean cloth.
CHECK FUNCTIONALITY OF THE MAX. TEMP. SENSORS OF THE QUARTZ TUBES AND THE SYSTEM PUMP	Every 6 months	Take out the max. temp. sensors and check their value with a well-functioning temperature sensor.

6 TROUBLESHOOTING

6.1 Alarms

In this paragraph the possible alarms will be troubleshooted in Table 9.

Table 9 Alarms, causes and solutions

ALARM CODE	POSSIBLE CAUSES	SOLUTION
SYSTEM PUMP TEMP NOT OK	Temperature of the System pump is out of bounds.	Check that all the valves are opened. Make sure the suction pipe has no air inside. Check if the temperature sensor functions correctly.
SYSTEM PUMP NO FLOW DETECTED	The System pump generates no flow	Check if all the valves are opened; Make sure the suction pipe has no air inside.
SYSTEM PUMP DRIVE ALARM	The System pump drive has a Drive Alarm	Check the frequency drive and its manual for more information on how to resolve this issue.
SYSTEM PUMP DRIVE FAULT	The System pump drive has a Drive Fault.	Check the frequency drive and its manual for more information on how to resolve this issue.
ACID TANK LEVEL TO LOW	The level of acid in the acid tank is too low.	Check the level of acid in the tank, when the level of acid is to low refill the tank up to the desired level; Check the level switch.
HYDROGEN PEROXIDE TANK LEVEL TO LOW	The level of hydrogen peroxide in the hydrogen peroxide tank is too low.	Check the level of hydrogen peroxide in the tank, when the level of hydrogen peroxide is to low refill the tank up to the desired level; Check the level switch.
UV CHAMBER TEMP NOT OK	The temperature in the UV chamber is not ok	Check if the system has flow; Check if the temperature sensor functions correctly; When this alarm occurs while the machine status is "Paused with acid" decrease the acid cleaning time or ask the dealer to disable the "Paused with acid" function.
UV SENSOR REPLACEMENT REQUIRED	The UV sensor needs replacement.	Ask your dealer to replace the UV sensor.
UV LAMP DRIVER ERROR	The lamp driver of the UV lights has an error.	Ask your dealer to reset the lamp drivers.
UV SENSOR NO RELIABLE MEASUREMENT	The UV transmission is very low, or the sensor has wrong values.	Recalibrate the UV sensor; Ask your dealer to replace the UV sensor.
UV SENSOR T10 CAN NOT BE DEFINED	When the T10 value is to low or the sensor has wrong values.	Recalibrate the UV sensor; Ask your dealer to replace the UV sensor.
UV LAMPS TURNED ON AND NO FLOW	No flow in the UV chambers.	Check if all the valves are opened; Make sure the suction pipe has no air inside.
QUICK-STOP PRESSED	The user pressed the quick-stop button.	Check if the system can start operating again and reset the alarm.
PH SENSOR CALIBRATION REQUIRED	The pH sensor needs to be calibrated.	Check chapter "5. Maintenance" for the calibration procedure.
SCREEN FILTER MOTOR HAS ALARM	The screen filter motor has an alarm	Check the thermal protection of the screen filter inside of the switch box, if it is turned off the motor asks too much power. Clean the screen and rinse filters.
SCREEN FILTER FLUSH PRESSURE TO LOW	The pressure on the filter is too low during flushing	Close the membrane valve to get more pressure during flush sequences.

6.2 Events

In this paragraph the possible events will be troubleshooted in Table 10.

Table 10 Event, causes and solutions

EVENT CODE	CAUSES	HOW TO RESOLVE
WORKING HOURS OF THE LIGHTS EXCEEDED	The maximum amount of working hours for the lights is exceeded.	Replace the UV lights.
ACID TANK EMPTY	The acid tank is empty.	Refill the acid tank.
HYDROGEN PEROXIDE TANK EMPTY	The hydrogen peroxide tank is empty.	Refill the hydrogen peroxide tank.

6.3 Frequently Asked Questions

In this paragraph the frequently asked questions will be troubleshooted in Table 11.

Table 11 Frequently asked questions

TASK	INTERVAL	POSSIBLE SOLUTIONS
WHY DOES MY AQUALUX NOT REACH THE SPECIFIED FLOW?	Membrane valve is turned to tightly. Highly polluted water.	Loosen the membrane valve. Better filtration before entering the system. Accept a lower transmission speed. Add more fresh water if possible.
WHY DOES MY FILTER RINSE SO FREQUENTLY?	Too much backpressure on flush valve. Polluted filter. Highly polluted water.	Decrease backpressure. Manually clean the filter. If this does not help replace the filter. Add more fresh water if possible.

7 DISPOSAL

⚠ CAUTION

WHEN DISASSEMBLING AQUALUX ALWAYS WEAR SAFETY BOOTS AND SAFETY GOGGLES.

7.1 How to Dispose the Product

The Aqualux shall only be disposed of by a qualified company that specializes in disposal of machinery.

To dispose of the Aqualux:

- Cut off the Aqualux its power supply.
- Notify a qualified company for disposal of machinery.

7.1.1 Disposal of electronic components

If the symbol on the right is on the product, the accessories or packaging indicates that this device must not be treated as unsorted municipal waste, but must be collected separately! Dispose of the device via a collection point for the recycling of waste electrical and electronic equipment if you live within the EU and in other European countries that operate separate collection systems for waste electrical and electronic equipment. By disposing of the device in the proper manner, you help to avoid possible hazards for the environment and public health that could otherwise be caused by improper treatment of waste equipment. The recycling of materials contributes to the conservation of natural resources. Therefore do not dispose of your old electrical and electronic equipment with the unsorted municipal waste.



7.1.2 Disposal of packaging waste

The Aqualux is packaged with ISPM 15 certified packaging wood and sealed with packaging plastic, which may be disposed through your local recycling facilities. By disposing of the packaging and packaging waste in the proper manner, you help to avoid possible hazards for the environment and public health.



7.1.3 Disposal of UV-lights

The UV-lights are categorized as small toxic waste (because they contain mercury) and therefore need to be exposed of using the local rules for small toxic waste.

APPENDIX I – SUPPLIED ACCESSORIES, CONSUMABLES AND SPARE PARTS

Supplied accessories

IMAGE	NAME	ARTICLE NUMBER
	User manual UDI 6 Matic filter	
	User manual VACON frequency inverter	
	User manual Dosage pump	
	User manual Lowara pump	

Spare parts

PART NAME	ARTICLE NUMBER
UV LIGHT	A0000191
QUARTZ TUBE INCLUDING SEAL AND LIDS	A0000250
DRIVERS	A0000061
UV-SENSOR	A0002042
MANIFOLD COVERING	A0002065
PRESSURE SENSOR	IF004409
PH-SENSOR	NI000010
EC-SENSOR	JU000002
TEMPERATURE SENSOR	IF004750

8 DECLARATION OF CONFORMITY FOR MACHINERY

EC declaration of conformity (DoC) of the machinery

Declaration according to Directive 2006/42/EC, as amended (hereafter called Machinery Directive). This language version of the declaration is verified by the manufacturer (original declaration).

that all the relevant provisions of the Machinery Directive are fulfilled;

We (manufacturer):

Business name:

Address:

Country:

Declare under our sole responsibility for the following machinery:

Generic denomination:

Function:

Model:

Type:

Serial number:

Commercial Name:

that the machinery also complies with the provisions of the following European Directives:

- DIRECTIVE 2014/30/EU relating to electromagnetic compatibility
- DIRECTIVE 2014/35/EU relating to low voltage appliances

that the machinery is in conformity with the following standards and/or other normative documents:

- EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
- NEN-EN-ISO 13849-1 Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design

that the following natural or legal person established in the Community is mandated in writing to perform all or part of the obligations and formalities connected with the Machinery Directive:

Business name:

Address:

Country:

Name:

Position:

and that the following natural or legal person established in the Community is authorized to compile the technical file:

Business name:

Address:

Country:

Name:

Position:

Place and date of issue (of this DoC):

.....

Signed by or for the manufacturer:

.....

Name:

Title: