



Instruction manual



ULTRAVIOLET RADIATION SYSTEMS

ECO MINISTAR – ECO MIDISTAR ECO 1 STAR - UV MIDISTAR LCD UV 1 STAR LCD – UV 2 STAR LCD UV 3 STAR LCD – UV 4 STAR LCD UV 6 STAR LCD – UV 8 STAR LCD UV 12 STAR LCD – UV 16 STAR LCD





INSTRUCTION MANUAL

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Dear Customer, thank you for choosing an Idroservice UV STAR system.

The U.V.R. sterilizer you have chosen is built according to flexibility and quality criteria; its peculiarity is, in fact, its high adaptability to the characteristics of the water to be treated, which makes it suitable for every debacterization process.

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This manual is a complete guide for the installation and use of Idroservice UVSTAR systems, and we strongly recommend you to CAREFULLY read it before This manual is to be considered an integral part of this product. It must be retained for future reference and handed over to the end user. This manual is to be considered an integral part of this product. It must be retained for future reference and handed over to the end user. Idroservice srl reserves the right to make changes at any time without notice or replacement. The technical features of this equipment may be downloaded from the website **www.idroservice.net**.







WARNING! READ THE INSTRUCTIONS AND WARNINGS IN THIS MANUAL CAREFULLY SINCE THEY PROVIDE IMPORTANT INFORMATION ABOUT SAFETY OF INSTALLATION, USE AND MAINTENANCE.

1. GENERALITIES

The units described in this manual are ultra violet light sterilizers (UV-C).

Experiments made it possible to observe that the emission spectrum of low-pressure mercury vapor lamps, corresponding to 254nm, determines the maximum inactivation of most bacteria; this led to the realization of special systems capable of exploiting this phenomenon.

In the UVSTAR unit, radiation is produced by special low-pressure mercury vapor lamps installed in a quartz tube, which is inserted at the center of a stainless steel chamber through which the water to be sterilized flows.

When ultraviolet germicidal energy comes in contact with bacteria, viruses, lactic acid bacteria, algae, protozoa, etc. which are generally found in water, it penetrates the outer cell membrane and destroys the DNA (deoxyribonucleic acid), which is the basic nucleus for the construction of all living beings. If the UV radiation dosage parameters and the energy-absorption coefficient of water are fulfilled, the UV sterilizer allows almost total elimination (over 99%) of microorganisms passing through it.

2. UV RADIATION DOSAGE

The UV dose required for the destruction of most bacteria is an intensity of 13.000 UV energy per unit at a wavelength of 254 nm. The energy unit (or dosage) is expressed in Micro Watt x second/cm2.

UV STAR systems have a dosage capacity of over 40.000 MicroWat tx second/cm2 at the flow rates referred to in the table of page 3.

3. ENERGY-ABSORPTION COEFFICIENT - TRANSMITTANCE

It is a laboratory measurement that allows testing the UV energy absorption of water. The higher its value, the lower the UV radiation diffusion through the body of water and, consequently, the lower its germicidal power. The optimum dosage value is set when the absorption coefficient is lower than 0,1.

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4. WATER CHEMISTRY

The UV STAR systems are designed for a water with the following minimum quality characteristics. If water doesn't complies these limits please contact Idroservice's technical department.

Turbidity	: < 1 NTU
Suspended solids	: < 3 mg/l
Manganese	: < 0,05 mg/l
Iron	: < 0,3 mg/l
Hydrogen sulfide	: < 0,05 mg/l
Color	: absent
pH	: absent : 6,5-9,5

5. CONSTRUCTION FEATURES

Eco series UV ray sterilizers consist of:

a) n. 1 cylindrical AISI 304 stainless steel sterilization chamber;

- b) n. 1 electronic ballast power supply with lamp operation/failure LED indicator;
- c) n. 1 low-pressure mercury vapour lamp with 4 pin connectors on one end;
- d) n. 1 pure quartz sleeve;
 e) n. 1 PVC O-Ring stuffing cap (sleeve fixing) for hydraulic sealing;

f) n. 1 black plastic lamp guard with 4 pin connector.





LCD series UV ray sterilizers consist of:

- a) n. 1 cylindrical AISI 304 stainless steel sterilization chamber.
- b) n. 1 electrical panel containing the electronic lamp ballasts (high frequency operation)
- and LCD card for system automation; c) low-pressure mercury vapour lamps with 4 pin connectors on one end; d) pure quartz sleeves;

- e) PVC O-Ring stuffing caps (sleeve fixing) for hydraulic sealing;
- f) black plastic lamp guards with 4 pin connector.

6. FLOW RATE TABLE (m³/h)/ TRASMITTANCE (%)/DOSAGE (mWs/cm²)

The UVR sterilizer flow rate varies depending on the transparency of the water to be treated (see TRASMITTANCE) and on the UVC radiation dose. Obviously, the more the water is clear and transparent, the lower is the employed UV dose, and the higher will be the flow rate. UV STAR suggests dimensioning your systems for flow rates related to an irradiance of 40.000 µWs/cm2 and 95% UV trasmittance, or particularly clear waters (i.e. with 99% transmittance, demineralized waters).

	UVT 95%	UVT 99%	N°
AQUASTAR Model	Dose 40.000 µW	Dose 40.000 µW	lampade
ECO MINI STAR	0,30	0,39	1 X 10 W
ECO MIDISTAR-UV MIDISTAR LCD	1,20	1,50	1 X 21 W
ECO 1 STAR - UV 1 STAR LCD	2,70	3,20	1 x 41 W
UV 2 STAR LCD	5,00	6,10	2 x 41 W
UV 3 STAR LCD	7,10	8,10	3 x 41 W
UV 4 STAR LCD	10,0	13,10	4 x 41 W
UV 6 STAR LCD	15,00	20,50	6 x 41 W
UV 8 STAR LCD	21,00	28,50	8 x 41 W
UV 12 STAR LCD	30,00	41,00	12 x 41 W
UV 16 STAR LCD	40,00	54,00	16 x 41 W

Note

1 Data referred to 95% transmittance at 1 cm (waterworks water or filtered and clear well water), absence of turbidity and color, temperature 20°C; 2 Data referred to 99% transmittance at 1 cm (demineralized water) temperature 20°C.

7. OTHER SPECIFICATIONS

:

Power supply	230V-50-60 Hz – single phase
Protection: IP 54 LCD series	IP 20 ECO series
Construction material	: AISI 304 stainless steel
Working temperature	environment 4-45°C, water 2-35°C
Maximum working pressure	8 bar
Pressure drop at maximum flow rate	0,2 bar





WARNING!

READ THE INSTRUCTIONS AND WARNINGS IN THIS MANUAL CAREFULLY SINCE THEY PROVIDE IMPORTANT INFORMATION ABOUT SAFETY OF INSTALLATION, USE AND MAINTENANCE. FOR PROPER OPERATION OF UV STAR, READ THE INSTRUCTIONS BELOW CAREFULLY BEFORE SWITCHING ON THE SYSTEM.

8. GENERAL SAFETY INSTRUCTIONS

- Power supply 230 VAC single phase 50/60 Hz plus ground.
- Do not view UV lamp while operating, or during maintenance out of the sterilizing chamber, as it can cause severe eye and skin irritation.
- Disconnect unit from the mains supply before any maintenance.
- Install the sterilizer as close as possible to the final water distribution, making sure it is protected from the effects of weather and always providing a bypass for easy maintenance without interrupting water supply to users.
- All maintenance work inside the unit shall be performed by trained personnel.
- Self-initiative interventions and changes are expressly prohibited for safety reasons.
- In case of non-compliance with the above, or in case of repairs carried out without our written consent, our warranty obligation and our liability on the unit will automatically expire.
- The owner of this unit shall make sure that all personnel involved in the installation, start-up, maintenance and repair is suitably qualified and that it has read and understood the safety instructions and this manual in its entirety before starting any operation.
- This instruction manual should be kept in a safe place for immediate reference.
- In the event of misuse or use not corresponding to the intended use of the unit or in case of wrong actions on the device, the manufacturer shall not be liable for any property damage or any personal injury.
- The unit shall be operated only if the start-up took place in accordance with the contents of this manual.
- The operating voltage and frequency of this unit shall match the grid frequency.
- This unit shall only be connected to a regular protected and grounded socket in accordance with CEI 64-8 precriptions as amended.
- Installation and start-up shall be performed in closed and dry spaces only.
- The damaged or missing warning/safety stickers shall be immediately replaced with new stickers.
- Do not touch the unit if you are barefoot or if any part of your body is wet.
- Do not expose this unit to temperatures above 40 °C and relative humidity greater than 70%.
- Never touch the socket with wet hands.
- ALWAYS disconnect from power before opening the unit.
- ALWAYS disconnect from power before touching the 4 pin connector or the lamps.
- In case of malfunction immediately disconnect power removing the socket; repairs must only be carried out by authorized and qualified electricians.
- Non-compliance with the above directions may cause death.
- The electrical connection shall be only carried out by qualified electricians. Non-compliance with this requirement endangers your life and the lives of others.
- Check the power cord at regular intervals.
- This manual is and integral and essential part of this product. It must carefully be retained for future reference and handed over to the end owner and/or user, or in case it is transferred to another facility.
- Installation is the sole responsibility of the purchaser and shall be carried out by qualified personnel following the instructions of this manual.
- Incorrect installation may cause harm to persons, animals and property for which the manufacturer cannot be held responsible.
- The packaging components (plastic bags, expanded polystyrene, plastic sheeting, etc.) must not be left within reach of children, since they are potential hazards.
- Never allow children or inexperienced adults to operate the unit.
- Repairs shall only be carried out by qualified personnel using original spare parts. Non-compliance with the above may compromise safety and invalidate any liability of the manufacturer.
- The electrical connection must be set up as described in the relevant section.
- No flammable object must be located near the unit.

9. GENERAL SAFETY RULES

Ref.	Warning	Risk
1	Do not perform operations involving opening or removal of the unit.	Electric shock caused by contact with energized components. Personal burn injuries due to overheated components or injuries caused by cutting edges and protrusions.
2	Do not start or turn off the unit inserting or unplugging the power cord.	Electric shock caused by damaged cables, plugs or sockets.
3	Do not damage the power cord.	Electric shock caused by energized bare wires.
4	Do not leave objects on top of the unit.	Personal injuries caused by an object falling off the unit.
5	Do not climb on the unit.	Damage to the unit or any object underneath caused by the unit falling away from its mounting.
6	Do not carry out cleaning operations before turning off the unit; pull the plug out and turn the dedicated switch off.	Electric shock for the presence of energized components.
7	Install the unit on a solid, level surface in an area free from vibration.	Rupture of the quartz sleeve.
8	Make the electrical connections using suitable cross section conductors.	Fire caused by overheating due to electrical current passing through undersized cables.
9	Reset all safety and control functions involved in maintenance operations of the unit and make an operational check before putting it back into operation.	Damage or shutdown of the unit caused by out-of-control operation.





10. INSTALLATION



11. ELECTRICAL CONNECTIONS

Before performing any operation, disconnect unit from mains supply using the external switch.

For greater safety, carry out a careful inspection of the electrical system, ensuring it complies with the applicable norms, since the equipment manufacturer



Shall not be held responsible for any damage caused by lack of system grounding or electricity supply faults. Check that the system is suitable for the maximum power absorbed by the unit (please refer to plate data) and that the cross-section of the electrical connection wires is suitable and complies with current laws.

The use of multiplugs, extension cords or adaptors is prohibited.

It is forbidden to use plumbing, heating and gas pipings for the ground connection of the unit.

To disconnect the unit from the mains use a bipolar switch conforming to CEI-EN standards (contact opening at least 3 mm, preferably with fuses).

Grounding of the unit is mandatory and the ground cable (which must be yellow-green and longer than phase cables) shall be fixed to the appropriate terminal.





12. HYDRAULIC CONNECTION

UV sterilizers should be installed vertically with water inlet from the bottom up in order to completely vent all air from the system.

Only ECO MINISTAR, ECO MIDISTAR, ECO1STAR and UV MIDISTAR LCD, UV1STAR LCD models may be installed horizontally with water inlet to either the right or left but with the connections looking upward in order to completely vent all air from the system. In case of the presence of the irradiation probe it is recommended to install the system vertically.

Carry out the installation in such a way that the UV manifold always remains full of water.

Make sure that there is space enough on the lamp removal side (at least 1,5 m) as to allow easy lamp change or insertion of the quartz sleeve.

Hydraulic installation and connection must be performed before inserting quartz sleeves and lamps.

The installation must be carefully carried out avoiding water hammer that could break the quartz sleeves.

13. QUARTZ SLEEVE INSTALLATION (see APPENDIX I)

Use clean or new cotton or latex gloves to handle quartz sleeves and lamps, in order not to dirty the glass surface. Remove all O-ring compression caps from the threaded crowns on the head flanges. Gently insert and drive the quartz sleeve through the threaded crowns. The quartz must reach the spring on the other end of the manifold and stop. Install the o-rings lubricated with vaseline.

Be very careful when inserting the quartz sleeve: it must be perfectly aligned with the head flange and must not protrude more that 5/8 mm. The risk would be breaking the quartz sleeve or cause water leakage because of improper sealing effect of the o-ring.

Insert the o-ring compression caps and screw them tightly, without using mechanical tools, until the o-ring is compressed in the tapered seat of the threaded crown close to the quartz sleeve.

Slowly and partially open the water inlet valve of the sterilizer, keeping the by-pass valve open. Slowly open the water outlet valve of the sterilizer until it is completely open.

Complete the inlet valve opening. Close the by-pass valve. Slowly pressurize the water sterilization chamber and check for leaks from hydraulic seals. If leaks occur, empty the unit from the lower drain and make sure again there is no dirt on the tapered seats of the o-rings. Repressurize the system.

14. UV LAMP INSTALLATION (see APPENDIX I)

Once you are sure that the equipment is hydraulically tested, you can move on to the next step, installing the lamps and starting up the unit. Make sure the unit is disconnected from power source before carrying out the following operations. Insert lamps in the quartz sleeves leaving their ends out for wire connection. Connect to each lamp the wire corresponding to the number printed on the plastic casing. Carefully insert lamp in the quartz sleeve. Cover flanges with their satinless steel tops. The unit is now ready for operation. Connect unit to power source. Turn electrical panel on.

15. HYDRAULIC CIRCUIT STERILIZATION

Before operating the unit, the hydraulic circuit needs to be sterilized in order to remove possibile contaminants. Introduce 20 ppm sodium hypochlorite solution (approx. 170 gr of commercial product 12% in 1000 liters water) at the start of the hydraulic circuit. Open all downstream faucets until you smell chlorine odor in the flowing water. Close all faucets. Let the sodium hypochlorite sterilizing solution stand in the duct. Turn the UV sterilizer on after 4/8 hours, wait 5 minutes (for lamp warm up). Open all utilities until the chlorine odor of the water disappears.

Turn the UV sterilizer on after 4/8 hours, wait 5 minutes (for lamp warm up). Open all utilities until the chlorine odor of the water disappears. N.B.

If water looks red or cloudy during this operation, inspect the quartz sleeves: they might be covered by a light iron coating or other precipitates, which reduce the sterilizing power of UV lamps. In this case, clean the sleeves and make sure the water quality conforms to the aforementioned specifications.

16. UV LAMP REPLACEMENT

Before carrying out the following operations, make sure the unit is disconnected from its power source. UV lamps have an expected life of about 9000 (standard lamps) or 13000 hours (Long Life Lamps), approximately equal to 1 year of continuous operation. Even if the sterilizer is not to be operated continuously, replace UV lamps every 24 months. After this period, the formation of mercury compounds on the walls of the quartz sleeves does not al-low ultraviolet rays passing through it in a quantity sufficient to perform the germicidal action even if the electrodes are intact. Some shortening of the lamp life can be expected when the unit is turned off and back on frequently: in this case, increase performance testing.

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17. QUARTZ SLEEVE CLEANING AND MAINTENANCE

Every month, check the tightness of o'ring. With time some drops of water can wet the inner part of the sleeve and the the lamp may be damaged.

When water passes through the sterilizer, precipitates may be deposited on the quartz sleeve.

We recommend to perform a quartz sleeve check 60 days after start-up. This will help determining the frequency of subsequent cleaning operations.

Wear rubber gloves when cleaning to avoid leaving fingerprints. Close water inlet and outlet valves and open the bypass valve. Unplug the lamps and remove from quartz sleeve. Delicately remove the quartz sleeves. Clean the quartz sleeve with paper moistened with warm water and soap and, if necessary, very carefully with an acid solution in order to remove iron and limescale deposits. Dry with a paper towel.

WARNING: do not wet the inside of the sleeve.

18. PERFORMANCE TESTING OF THE UV STERILIZER

The UV units performance should be periodically tested. If the specific photometric equipment (radiometers, sensors, etc.) is not available, the most reliable test is the bacterial count according to current standard methods. If the user has no specific competence, the water samples, before and after sterilization, shall be picked up by a person in charge of a specialized laboratory.





19. SPARE PARTS

Code GPH212T5/4	Description 10W Jamp for ECO MINI STAR
GPH436T5/4LL	21W lamp for ECO MIDISTAR/UV-MIDI STAR LCD LONG LIFE (life 13.000 h)
G36T5/4 LL	41W lamp for UV STAR 116 LONG LIFE (life 13.000 h)
UVS-Q235	Quartz sleeve for UV MINI STAR
UVS-Q485	Quartz sleeve for UV MIDI STAR
UVS-Q900	Quartz sleeve for UV STAR (all models except the above)
UVS-01	4 pin connector with wire and cap
UVS-02	black sleeve locking screw cap
UVS-04	yellow o-ring
UVS-05	black plastic lamp housing
UVS-06	4 pin connector with 1.5 m wire

20. TROUBLESHOOTING

Problem	Cause	Tip
1) the unit is connected to power source but the lamps or part of	A) No voltage reaches the electrical panel, led display and warning lights are off.	a) check voltage within electrical panel.
them do not fire.	B) No voltage reaches the reactors	b) check temperature in the sterilization chamber
	C) the microcontroller detects lamp failure.	 c) check voltage of the involved ballast, check its fuse. Check wire connection of the lamp. Check performance of the involved lamps.
2) The UV lamp has a short life, it	A) Excessive vibrations.	a) check and eliminate the vibration source.
burns out frequently.	B) Too many consecutive turning on and off (the lamp may be turned on and off not more than 3-4 times a day).	b) Check the on and off cycles.
3) Water leakage from the PVC sleeve block.	A) the sleeve block was not tightened properly.	a) tighten the sleeve block without using mechanical tools (pliers).
	B) O-Ring is torn or damaged.	 b) check O-Ring and replace if necessary.
	C) the quartz sleeve is cracked.	c) check quartz sleeves and replace if necessary.
	D) The tapered seat of the hydraulic seal is dirty.	d) Check and clean the tapered seat.
4) Scarce germicidal power of the	A) The UV lamps do not work properly.	a) Check.
UV sterilizer.	B) Lamps are more than 1 year old.	b) Check installation date and operation hours. Replace lamps if necessary.
	C) the quartz sleeves are dirty.	c) Remove and clean the quartz sleeves.
	D) The inlet water of the unit is temporarily cloudy.	d) Improve pre-filtration, if any. Otherwise insert pre-filter.
	E) The maximum flow rate of the unit is higher than the value indicated in the technical specifications.	e) Check and reduce the flow rate tu the value shown in the table.

N.B.: for technical problems affecting the lamp ballast please contact IDROSERVICE and, if necessary, remove only the electronical panel and send it to the company for repair.

21. RECYCLING OF OLD EQUIPMENTS

Recycling shall be in accordance with Legislative Decree 13 of July 25, 2005, No. 151 "Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC for the use of certain hazardous substances in electrical and electronic equipment and waste disposal".



This symbol means that your inoperative electronical appliance must be collected separately and not mixed with the household waste. The European Union has implemented a specific collection and recycling system for which producers are responsible. This appliance has been designed and manufactured with high quality materials and components that can be recycled and reused. Electronical appliances are liable to contain parts that are necessary in order for the system to work properly but which can become a

health and envi-ronmental hazard if they are not handled or disposed of in the proper way. Consequently, please do not throw out your inoperative appliance with the household waste.

If you are the owner of the appliance, you must deposit it in the appropriate local collection point or leave it with the vendor when buying a new appliance. If you are a professional user, please follow your supplier's instructions.

Illegal disposal of the product by the user involves the application of administrative sanctions pursuant to Legislative Decree No. 22/1997 (Art. 50 et seq).







APPENDIX I - INSTALLATION INSTRUCTIONS

- 1. UV STAR Components a) UVC lamp
- b) Quartz sleeve c) Delrin manifold

- d) O-ring
 e) 4 pin connector with lamp housing and electronic ballast f) Stainless steel housing



3. Insert the o-ring in the quartz sleeve neck.



5. Lift the quartz sleeve neck with your index finger until reaching the end stop on the edge of the Delrin cap.



2. Insert the quartz sleeve in the stainless steel housing, making sure that the quartz is perpendicular and perfectly fits into the spring at the bottom of the manifold. WARNING: if the quartz sleeve is not inserted completely straight, it will break when screwing the Delrin manifold (see point 4).



4. Screw the Delrin manifold. Do not overtighten.



6. Now screw up and tighten the cap hand-tight as much as possible (do not use tools).







7. Let water in as to put the unit under pressure and check for leaks using absorbing paper.



8. Plug lamp to 4 pin connector



9. Insert housing and lamp inside the stainless steel housing.



10. Connect grounding and tightly screw to stainless steel housing.



11. Fill the housing with water (if no water is present). Connect power supply and allow the lamp to warm up for 4/5 minutes; let the water run for another 2/3 minutes. You may now use the produced water.





APPENDIX II - NOTES ON THE OPERATION OF ECO - STAR SYSTEMS

ECO-STAR single lamp systems are characterized by extreme simplicity of use, apart from being high quality products perfectly suited for water ster-ilization; they are produced in Italy and certified for use with drinking water. They are fitted with plug integrated ballast with two-color LED: lamp on (green led), burned out lamp (red led). Since the signal cannot be remoted, we suggest to install the plug/ballast in an easily accessible place in order to easily check the lamp status. Lamps shall be changed after one year operation, regardless of whether they are burned out or not; we suggest to record the date of start-up of the sterilizer with new lamps.

APPENDIX III - UV STAR LCD PANEL PROGRAMMING INSTRUCTIONS

INTRODUCTION

The UV STAR LCD electrical panel is factory-prepared for immediate operation without need for further action by the installer.

If the appliance is equipped with radiation and/or temperature sensor (optional), or if you plan to install a water shut-off solenoid valve upstream of the system, you will have to enter the PARAMETER MENU PROGRAMMING (see following pages). However, we suggest the installer to set his phone number on the display; doing so, it will be displayed when the system signals an alarm









UVC %: indicates the present lamp irradiance (only if optional sensor installed).	
TEMP : indicates the temperature of water and UVC lamps (only if optional sensor installed).	TEMP- 49°C
RESETTING THE UV LAMP RUN TIME COUNTER	
Each time UV lamps are replaced, the lamp run time counter shall be reset. Press both arrow keys ▲ ▼ at the same time . "NEW LAMP?" message will be displayed.	NEW LAMPS?
Confirm by quickly pressing OK.	LAMPS OK
After pressing OK, the number of resets from the first system start-up will be displayed for one second.	CHANGE 205 ON/STAND BY
ALARM VISUALIZATION ON LCD DISPLAY	
The electronic UV STAR LCD display allows to visualize and remotize the alarms signaling the reasons for failure of the R.U.V. system. LAMPS OFF signals that one or more lamps are burned out and do not turn on. Replace burned out lamps.	LAMPS OFF
CHANGE LAMP signals that lamp efficiency is exhausted. This means that their sterilizing power is exhausted or reduced even if they are on. Replace all lamps.	CHANGE LAMPS ON/STAND BY
HIGH TEMPER. (only if temperature sensor installed) signals that lamps reached a high operating temperature, which can irreparably damage the lamps. The panel automatically turns all lamps off. Let fresh water flow inside the R.U.V. unit and restart only after the stainless steel manifold has cooled.	HIGH TEMPER.
LOW UVC (only if irradiance sensor installed) signals that 254nM irradiance is below the established minimum. Check for burned out lamps, if water is more cloudy than normal, if the quartz sleeves are dirty, if the running time of the UV lamps is close to exhaustion.	





ALARM INTERVENTION SETTINGS / PARAMETER MENU PROGRAMMING

ALARM INTERVENTION SETTINGS	
From service menu enter the "SETUP OK" menu pressing arrow key \blacktriangle + OK at the same time (with unmodifiable password "818"); from now on you can switch between the parameters listed below using the arrow key \blacktriangle , select the parameter pressing OK (use arrow keys to change digits and press OK to move on).	SETUP? OK ON/STAND BY
U	PASSWORD 818 Owstand by
SET Hr = sets of the partial operation hour count-down timer for the exhausted lamp alarm (default 8.000 hours);	SET Hr 8000 Ovystand by
SET TEMP = sets the temperature, in Celsius degrees, beyond which the temperature alarm is activated in operation mode 2 (default 50°C);	SET TEMP 50 OKSTAND BY
SET UVC = sets the irradiance percentage below which the alarm is activated in operation mode 1 (default 80%);	SET_UUC 80 Ovystand by
Option SET N or SET Y = sets the driving of the ballast switching relay in case of alarm signal (default N, i.e. in case of alarm, lamps are not turned off). Select Y if you wish that lamps are turned off in the event of an alarm.	SET MODE N Ø ON/STAND BY
MODE option: MODE 0 = operation without irradiance and (default) temperature sensors; MODE 1 = operation with irradiance sensor, but without temperature sensor; MODE 2 = operation with irradiance and temperature sensors. EXIT SETUP = pressing OK, you exit the password-protected set up.	EXIT SETUP?





MODE OPTION

1. FACTORY DEFAULT OPERATION.

OPTION: MODE = 0 WITHOUT IRRADIANCE/TEMPERATURE SENSORS

SET = N ALARM WITH LAMPS ON

Suggested mode when no water shut-off solenoid valve is installed upstream of the UV system in the event of alarm. The alarm may be remotized with an alarm relay (ALARM FREE CONTACT). Not burned out lamps still remain on in multi-lamp systems.

In this mode, the system works without irradiance and temperature sensors (optional), i.e. recognizing only following alarms;

- burned out lamp (LAMP OFF will appear in the display window);
- exhausted lamp (CHANGE LAMP will appear in the display window);

In both ALARM events:

- all ballasts are still energized;
- not burned out lamps still remain on in multi-lamp systems;
- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization (see page 8); "LAMP OFF" or "CHANGE LAMP" appears in the display window;
- "CONTACT SERVICE" followed by the set telephone number will appear in the display window;
- the partial hour count-down timer stops;
- the system hour counter continues to count.

With the LAMP OFF function, after replacing the lamp that caused the alarm, the system automatically returns to normal operation disarming the alarm signals. With the CHANGE LAMP function, it will be necessary to reset the partial hour counter after replacing the lamps; to do this, simultaneously press the arrow keys ▲ ▼; "NEW LAMP?" will appear in the display window, quickly press OK button.

2. OPTION MODE = 0 WITHOUT IRRADIANCE/TEMPERATURE SENSORS SET= Y ALARM WITH LAMPS OFF

Suggested mode when a water shut-off solenoid valve is installed upstream of the UV system in the event of alarm. The alarm may be remotized with an alarm relay (ALARM FREE CONTACT). In multi-lamp systems all the lamps are turned off (including the working ones).

Enter the PARAMETER MENU for this option (see ALARM INTERVENTION SETTINGS / PARAMETER MENU) and set MODE = 0 - SET=Y.

In this mode, the system works without irradiance and temperature sensors (optional), i.e. recognizing only following alarms:

- burned out lamp (LAMP OFF will appear in the display window);
- exhausted lamp (CHANGE LAMP will appear in the display window);

In the event of an ALARM:

- all ballasts are de-energized;
- all lamps are turned off:

- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization and for the control signal to a solenoid valve to stop water supply:

- "LAMP OFF" or "CHANGE LAMP" appears in the display window;
- "CONTACT SERVICE" followed by the set telephone number will appear in the display window;

- the partial hour count-down timer stops;

- the system hour counter continues to count.

In order to restart the system with the LAMP OFF function, press OK button, wait a few seconds, then press OK again holding it pressed for a few seconds. With the CHANGE LAMP function, it will be necessary to reset the partial hour counter after replacing the lamps; to do this, simultaneously press the arrow keys ▲ ▼; "NEW LAMP?" will appear in the display window, quickly press OK button.

3. OPTION: MODE = 1 WITH IRRADIANCE SENSOR, WITHOUT TEMPERATURE SENSOR

SET= N ALARM WITH LAMPS ON

Necessary mode when the system is fitted with irradiance sensor. Calibration of the UVC sensor shall be carried out. Suggested mode when no water shut-off solenoid valve is installed upstream of the UV system in the event of alarm. The alarm may be remotized with an alarm relay (ALARM FREE CONTACT). In the event of an alarm, the working lamps still remain turned on.

Enter the PARAMETER MENU for this option (see ALARM INTERVENTION SETTINGS / PARAMETER MENU) and set MODE=1 - SET=N.

In this mode, the system works with irradiance sensor and without temperature sensor (optional), i.e. recognizing only following alarms:

- burned out lamp (LAMP OFF will appear in the display window);
 exhausted lamp (CHANGE LAMP will appear in the display window);
- low irradiance rate (LOW UVC % will appear in the display window).

In the event of ALARM:

- all ballasts are still energized;
- not burned out lamps still remain on in multi-lamp systems;
- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization;
 "LAMP OFF" or "CHANGE LAMP", or "LOW UVC" appears in the display window;
 "CONTACT SERVICE" followed by the set telephone number appears in the display window;
- the partial hour count-down timer stops;

- the system hour counter continues to count.





In this mode, the following shall be first carried out:

- calibration of the UV-C reading, i.e. it must be matched 100% with the mV value read by the irradiance sensor (see paragraph SET CAL UVC PARAMETERS); - establish alarm intervention set points (see paragraph SET UVC PARAMETERS);

With LAMP OFF, the system automatically returns to normal operation after replacing the lamp that caused the alarm to start, disarming the alarm signals. With CHANGE LAMP it is necessary to reset the partial hour counter after replacing the lamps: push the arrow keys 🔺 🛪 the same time. "NEW LAMP?" appears

in the display window, quickly press OK. With LOW UVC, when the irradiance level turns back above the set point threshold + hysteresis (equal to 5 percentage points), the system automatically returns to normal operation disarming the alarm signals. If, for example, the irradiance alarm set point is 80%, the alarm will automatically disarm only when irradiance reaches

4. OPTION MODE = 1 WITH IRRADIANCE SENSOR, WITHOUT TEMPERATURE SENSOR

SET=Y ALARM WITH LAMPS OFF

85%

Necessary mode when the system is fitted with irradiance sensor. Calibration of the UVC sensor shall be carried out. Suggested mode when a water shut-off solenoid valve is installed upstream of the UV system in the event of alarm. The alarm may be remotized with an alarm relay (ALARM FREE CONTACT). In the event of an alarm, all lamps will be turned off (including the working ones).

Enter the PARAMETER MENU for this option (see ALARM INTERVENTION SETTINGS / PARAMETER MENU) and set MODE=1 - SET=Y.

In this mode, the system works with irradiance sensor and withour temperature sensor (optional), i.e. recognizing only following alarms:

- burned out lamp (LAMP OFF will appear in the display window);

exhausted lamp (CHANGE LAMP will appear in the display window);

low irradiance rate (LOW UVC % will appear in the display window).

In the event of ALARM:

- all ballasts are de-energized;

- all lamps are turned off;

- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization and for the control signal to a solenoid valve in order to stop water supply; - "LAMP OFF" or "CHANGE LAMP", or "LOW UVC" appears in the display window"; - "CONTACT SERVICE" followed by the set telephone number appears in the display window;

- the partial hour count-down timer stops; - the system hour counter continues to count.

In this mode, the following shall be first carried out:

- calibration of the UV-C reading, i.e. it must be matched 100% with the mV value read by the irradiance sensor (see paragraph SET CAL UVC PARAMETERS); - if necessary, change the default UVC alarm set point (see paragraph SET UVC PARAMETERS);

To restart the system with LAMP OFF, press OK, wait a few seconds and press OK again holding it pressed for a while. With CHANGE LAMP it is necessary to reset the partial hour counter after replacing the lamps; to do this, press the arrow keys A V at the same time. "NEW LAMP?" appears in the display window, quickly press OK.

With LOW UVC it is necessary to remove the cause of low irradiance, press OK, wait a few seconds then press OK again holding it pressed for a while.

5. OPTION MODE = 2 WITH IRRADIANCE SENSOR AND TEMPERATURE SENSOR

SET=N ALARM WITH LAMPS ON

Necessary mode when the system is fitted with irradiance and temperature sensors. Calibration of the UVC sensor shall be carried out. Suggested mode when no water shut-off solenoid valve is installed upstream of the UV system in the event of alarm. The alarm may be remotized with an alarm relay (ALARM FREE CONTACT). In the event of an alarm, the working lamps remain on, except in case of temperature alarm (ALARM HIGH TEMP) in which case they are turned off.

Enter the PARAMETER MENU for this option (see ALARM INTERVENTION SETTINGS / PARAMETER MENU) and set MODE=2 - SET=N.

In this mode, the system works with both the irradiance and the temperature sensors (optional), i.e. recognizing following alarms:

- burned out lamp (LAMP OFF will appear in the display window);
- exhausted lamp (CHANGE LAMP will appear in the display window);
- low irradiance rate (LOW UVC % will appear in the display window);
- high lamp temperature (ALARM HIGH TEMP will appear in the display window).

In the event of LAMP OFF, CHANGE LAMP, LOW UVC alarm:

- all ballasts are still energized;

- not burned out lamps still remain on in multi-lamp systems;
- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization;
- "LAMP OFF" or "CHANGE LAMP", or "LOW UVC" appears in the display window;
- "CONTACT SERVICE" followed by the set telephone number appears in the display window;
- the partial hour count-down timer stops; - the system hour counter continues to count.

In the event of ALARM HIGH TEMP alarm:

- all ballasts are de-energized;

- all lamps are turned off:

- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization and for the control signal to a solenoid valve to stop water supply;

"ALARM HIGH TEMP" will appear in the display window;
 "CONTACT SERVICE" followed by the set telephone number appears in the display window;

the partial hour count-down timer stops;





With LAMP OFF the system automatically returns to normal operation after replacing the lamp that caused the alarm, disarming the alarm signal. With CHANGE LAMP it is necessary to reset the partial hour counter after replacing the lamps; to do this, press the arrow keys A V at the same time, "NEW LAMP?" will appear in the display window, then quickly press OK.

With LOW UVC, when the irradiance level turns back above the set point threshold + hysteresis (equal to 5 percentage points), the system automatically returns to normal operation disarming the alarm signals. If, for example, the irradiance alarm set point is 80%, the alarm will automatically disarm only when irradiance reaches 85%

With ALARM HIGH TEMP, when the water temperature drops below the set point threshold + hysteresis (equal to 10°), the system automatically resets, the lamps turn back on and the alarms are disarmed. If, for example, the temperature alarm set point is 50°C, the alarm will automatically disarm only when the temperature reaches 40°

In this mode, the following shall be first carried out:

- calibration of the UV-C reading, i.e. it must be matched 100% with the mV value read by the irradiance sensor (see paragraph SET CAL UVC PARAMETERS);
- establish the UVC alarm intervention set point (see paragraph SET UVC PARAMETERS);
 establish the TEMPERATURE alarm intervention set point (see paragraph SET TEMP PARAMETERS);

6. OPTION MODE =2 WITH IRRADIANCE + TEMPERATURE SENSORS SET=Y ALARM WITH LAMPS OFF

Necessary mode when the system is fitted with irradiance and temperature sensors. Calibration of the UVC sensor shall be carried out. Suggested water shut-off solenoid valve is installed upstream of the UV system in the event of alarm. The alarm may be remotized with an alarm relay (ALARM FREE CONTACT). In the event of an alarm, all lamps are turned off (including the working ones).

This mode is recommended when a water shut-off solenoid valve is installed upstream of the UV system. The free contact (NO or NC) in the terminal panel, near ALARM FREE CONTACT, may be used; this contact will be activated in the event of an alarm. Since it is expected that a solenoid valve blocks water flow into the system, all lamps will be turned off in the event of an alarm.

Enter the PARAMETER MENU for this option (see paragraph ALARM INTERVENTION SETTINGS / MENU PARAMETERS) and set MODE = 2 - SET=Y.

In this mode, the system works with both the irradiance and the temperature sensors (optional), i.e. recognizing following alarms:

burned out lamp (LAMP OFF will appear in the display window);
 exhausted lamp (CHANGE LAMP will appear in the display window);

- low irradiance rate (LOW UVC % will appear in the display window);
 high lamp temperature (ALARM HIGH TEMP will appear in the display window).

In the event of ALARM LAMP OFF, CHANGE LAMP, LOW UVC:

- all ballasts are de-energized;

- all lamps are turned off;

- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization of the alarm and for the control signal to a solenoid valve in order to stop water supply.

"LAMP OFF" or "CHANGE LAMP", or "LOW UVC" appears in the display window;

"CONTACT SERVICE" followed by the set telephone number appears in the display window;

- the partial hour count-down timer stops;

- the system hour counter continues to count.

In the event of ALARM HIGH TEMP: - all ballasts are de-energized;

- all lamps are turned off

- the alarm relay is energized (see terminal board ALARM FREE CONTACT) for possible remotization of the alarm and for the control signal to a solenoid valve in order to stop water supply; - "ALARM HIGH TEMP" will appear in the display window; - "CONTACT SERVICE" followed by the set telephone number appears in the display window;

- the partial hour count-down timer stops;

- the system hour counter continues to count.

To restart the system with LAMP OFF, press OK, wait a few seconds and press OK again holding it pressed for a while.

With CHANGE LAMP it is necessary to reset the partial hour counter after replacing the lamps; to do this, press the arrow keys A V at the same time. "NEW LAMP?" appears in the display window, quickly press OK.

With LOW UVC it is necessary to remove the cause of low irradiance, press OK, wait a few seconds then press OK again holding it pressed for a while.

With ALARM HIGH TEMP, when water temperature drops below the set point threshold + hysteresis (equal to 10°C), the system automatically resets, the lamps turn back on and the alarms are disarmed. If, for example, the temperature alarm set point is 50°C, the alarm will automatically disarm only when the temperature reaches 40°

In this mode, the following shall be first carried out:

- calibration of the UV-C reading, i.e. it must be matched 100% with the mV value read by the irradiance sensor (see paragraph SET CAL UVC PARAMETERS);
- establish the UVC alarm intervention set point (see paragraph SET UVC PARAMETERS);
- establish the TEMPERATURE alarm intervention set point (see paragraph SET TEMP PARAMETERS);





APPENDIX IV - INSTALLATION AND CALIBRATION OF THE TEMP./IRRADIATION SENSOR (OPTIONAL)

INSTALLATION OF THE IRRADIANCE SENSOR

The irradiance sensor shall be installed and calibrated during start-up.

Perform hydraulic assembling by screwing the sensor into the appropriate \mathcal{U} " sleeve at the center of the manifold, being careful not to cover the slide inside the sensor with teflon, and not to excessively force the sleeve. Periodically clean the probe with a detergent.



CALIBRATION OF THE IRRADIANCE SENSOR

CAL UVC allows calibrating the conductivity sensor; based on 100% irradiance, with new lamp (turned on since 5 minutes), clean quartz sleeve and manifold full of water to be treated.



Check, after some time, if irradiance tends to drop and, if so, take the necessary action (see alarm LOW UVC).

Warning: the slide of the irradiance sensor tends to become dirty over time and therefore perform a wrong reading. Periodic sensor cleaning is highly recommended.







APPENDIX V

















Certificazione di idoneità all'uso alimentare

Idroservice srl

certifica che le apparecchiature qui di seguito indicate:

Sterilizzatori a raggi ultravioletti UV STAR (tutti i modelli);

sono certificate a norma del D.M. 174/04.

Stante quanto sopra, le apparecchiature indicate possono essere impiegate per il trattamento delle acque destinate al consumo umano.

La apparecchiature di cui sopra devono comunque essere installate a regola d'arte e mantenute da parte dell'utilizzatore finale secondo le modalità raccomandate nel libretto di istruzioni, devono essere impiegate in modo corretto e non devono in alcun modo essere contaminate con sostanze che rappresentino un rischio per la salute.

Idroservice srl opera con sistema di qualità ISO 9001:2008 certificato dall'EQA (European Quality Assurance). Numero di registrazione U3275.

Pomezia, 29 Aprile 2011

Il Direttore Tecnico Datt. Salvatore Parboni







IDROSERVICE SRL Azienda certificata ISO 9001 2008 nr. cert. U3275



Dichiarazione di conformità CE

Idroservice srl

dichiara che le apparecchiature qui di seguito indicate:

Sterilizzatori a raggi ultravioletti UV STAR serie ECO; Sterilizzatori a raggi ultravioletti UV STAR serie LCD; Sterilizzatori a raggi ultravioletti UV STAR serie speciale ad amalgama;

sono state progettate e costruite secondo la regola dell'arte, e sono conformi a quanto previsto dalle seguenti direttive comunitarie:

Direttiva macchine: 2006/42/CE (ove applicabile) Direttiva bassa tensione: 2006/95/CE (ove applicabile) Compatibilità elettromagnetica: 2004/108/CE

Idroservice srl opera con sistema di qualità ISO 9001:2008 certificato dall'EQA (European Quality Assurance). Numero di registrazione U3275.

Pomezia, 29 Aprile 2011

Il Direttore Tecnico Dott. Salvatore Carboni





IDROSERVICE SRL Azienda certificata ISO 9001 2008 nr. cert. U3275









IDROSERVICE SRL Azienda certificata ISO 9001 2008 nr. cert. U3275

Dichiarazione di conformità PED

Idroservice srl

certifica che le apparecchiature qui di seguito indicate:

Addolcitori serie: Eco Compact, Compact, Evolution, R, RA, RP, RPP, DX, DXP Filtri serie: FVM, KVM, DFVM, FVA, KVA, DFVA, DA, KA, DFA, DP, KP, DFP, DPP, KPP, DFPP

Denitrificatori serie: DN

Apparecchiature per la rimozione di Ferro e Durezza serie: ECOMIX Apparecchiature per la rimozione Arsenico serie: AS ed ASP; Demineralizzatori serie: DM Osmosi inversa serie: TWE, TWE-LP, TW, BWE, BW, BW-HF, SW Sterilizzatori R.U.V.: UV STAR (tutti i modelli) Filtri multi cartuccia in acciaio inox: serie FM

rispondono ai requisiti richiesti dal Decreto Legislativo nº 93 del 25/02/2000, quale attuazione della direttiva 97/23/CE in materia di attrezzature a pressione (PED), rientrando nella direttiva stessa in CATEGORIA 1, secondo procedura del MODULO A, che prevede il metodo di Controllo di Fabbricazione Interno, non soggetto ad intervento di Organismo Notificatore e ad ispezione obbligatoria.

Idroservice srl opera con sistema di qualità ISO 9001:2008 certificato dall'EQA (European Quality Assurance). Numero di registrazione U3275.

Pomezia, 29 Aprile 2011

Il Direttore Tecnico Dott. Salvatore Parboni



CERTIFICATO DI GARANZIA

APPARECCHIATURA

ACQUIRENTE

Numero e Data Documento Fiscale

Condizioni di Garanzia

Idroservice srl garantisce che i prodotti venduti sono esenti di vizi o difetti di progettazione e realizzazione, nonché vizi intrinseci ai materiali utilizzati.

Idroservice srl garantisce le proprie apparecchiature contro difetti manifestatesi entro 12 mesi dalla data del DDT di vendita alla azienda installatrice.

La garanzia copre tutte le parti dell'apparecchiatura e comporta la riparazione e/o sostituzione del componente risultato difettoso ed è resa f.co fabbrica.

La garanzia non copre i danni derivanti da cause non imputabili al produttore. In particolare per installazione errata o difforme da quanto descritto nel presente manuale, da mancata manutenzione periodica, da utilizzo in maniera impropria e/o con acque non adatte alla tipologia dell'apparecchiatura acquistata.

La garanzia è resa f.co stabilimento Idroservice srl Via Don Tazzoli, 12 00040 Pomezia. Le spese di trasporto sono interamente a carico del beneficiario della presente garanzia. E' esclusa la sostituzione di parti e/o componenti delle apparecchiature senza la preventiva visione ed approvazione da parte dell'ufficio tecnico Idroservice srl.

La garanzia è altresì esclusa nel caso in cui l'apparecchiatura abbia subito danni derivanti da trasporti, da sbalzi di tensione elettrica, fulmini, sbalzi di pressione idraulica, eccesso di umidità ambientale.

Qualora dovessero emergere difettosità il cliente finale deve rivolgersi al proprio installatore/rivenditore il quale provvederà a contattare la Idroservice srl per prendere accordi sulle modalità di riparazione dello stesso.

Per qualsiasi reclamo contattare la Idroservice srl al seguente indirizzo e-mail: idroservice@idroservice.net .





IDROSERVICE SRL Azienda certificata ISO 9001:2008 nr. cert. U3275



Certificate of Assessment

Idroservice S.r.l.

Via Don Tazzoli, 12 - 00040 Pomezia - ROMA, Italy

EQAICC hereby grants to the above company whose Quality Management System is in conformance with

ISO 9001:2008

Scope

Progettazione, produzione e commercializzazione di apparecchiature, impianti e prodotti chimici per il trattamento delle acque.

Design, manufacture and selling of: equipment and chemical products for water treatment.

Registration No. U3275 First issued on 25th February, 2002 Reissued on 29th January, 2011 This certificate is valid until 13th February, 2014



The Chief Executive





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