Installation and operating instructions

– Translation –

JUDO UV disinfection system

JUV 200 GS

Please transfer to the operator.
Read before installation and commissioning!

Part no.: 1703300

Revision level: 09.12.2020

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Contents

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	EU-Konformitätserklärung	Dokument-Nr.: 441

Hersteller:	JUDO Wasseraufbereitung GmbH
Anschrift:	Hohreuschstraße 39 - 41 D - 71364 Winnenden
Produktbezeichnung:	JUDO UV Entkeimungsanlage
Typ:	JUV 200 GS
Teilenummern:	8350086
Beschreibung:	zur Entkeimung von klarem, farblosem, eisen- und manganfreiem Wasser.

Hiermit erklärt die JUDO Wasseraufbereitung GmbH als Hersteller, dass benanntes Produkt allen einschlägigen Bestimmungen der angewandten Rechtsvorschriften (nachfolgend) - einschließlich deren zum Zeitpunkt der Erklärung geltenden Änderungen - entspricht. Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller. Diese Erklärung bezieht sich nur auf die Anlage in dem Zustand, in dem diese in Verkehr gebracht wurde; vom Endnutzer nachträglich angebrachte Teile und/oder nachträglich vorgenommene Eingriffe bleiben unberücksichtigt.

Folgende Rechtsvorschriften wurden angewandt:

- Niederspannungsrichtlinie 2014/35/EU
- EMV-Richtline 2014/30/EU
- RoHS-Richtlinie 2011/65/EU

Folgende harmonisierte Normen wurden angewandt:

- DIN EN 60204-1 Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen -
- DIN EN 50561-1 Kommunikationsgeräte auf elektrischen Niederspannungsnetzen - Funkstöreigenschaften - Grenzwerte und Messverfahren -
- DIN EN IEC 61000-6-1 VDE 0839-6-1:2019-11; Elektromagnetische Verträglichkeit

Name und Anschrift der Person, die bevollmächtigt ist, die technischen Unterlagen zusammenzustellen:

Konstruktionsabteilung IGT

Anschrift:	Hohreuschstr. 39 - 41, 71364 Winnenden
Ort/Datum:	Winnenden, 12.02.2020

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Dear customer,

Thank you for the confidence you have shown in us by purchasing this product. In purchasing this JUDO disinfection system you have procured a state-of-the-art disinfection system.

Our aim is that you remain with us as a satisfied customer. Therefore we kindly ask that if you have any questions concerning your JUDO disinfection system or if you have any general questions concerning water treatment, then please contact our field service representative or directly contact either our works in Winnenden (Germany), subsidiary in Austria or JUDO Wasseraufbereitung AG in Switzerland.
If you have any queries, please specify the model name, order and manufacturing numbers that you can find on the type label of your JUDO disinfection system.

Every JUDO disinfection system has been carefully checked prior to supply. Nevertheless, if difficulties occur, please contact your responsible customer service representative.

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1 Introduction

1.1 About these installation and operating instructions

These installation and operating instructions should simplify getting to know your JUDO disinfection system and inform you of its intended applications. The installation and operating instructions contain important information so that you can use the JUDO disinfection system safely, professionally and economically. They contain basic information that must be observed during installation, operation and maintenance. Observing this information will help to avoid dangers, reduce repair costs and increase the reliability and service life of your JUDO disinfection system.
Alongside the installation operating instructions and the legal regulations applicable in the country and place of use in respect of accident prevention, the recognised technical regulations for safe and professional work must be observed.
All pictorial, dimensional and implementation information correspond to the date of going to press. We reserve the right to make changes due to technical progress and continuing development. Model and product claims cannot be lodged.

The installation and operating instructions must always be available at the place of use of the JUDO disinfection system and must be kept in a good, legible state.
All persons involved in the installation, commissioning, operation, maintenance, service and repair of the JUDO disinfection system, must be appropriately qualified and trained and must have carefully read and understood these installation and operating instructions and also any separate installation and operating instructions for other devices and systems.

1.2 Validity of these installation and operating instructions

These installation and operating instructions are valid for the following models:

Designation	Model	Order no.
JUDO UV disinfection system	JUV 200 GS	8350086

Tab. 1: Models

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1.3 Warranty

The warranty is valid in accordance with our general terms of sale and delivery only if

- The JUDO disinfection system is used solely for its intended use and its system components are not opened, tampered with or incorrectly treated in any other way,
- Safety guards are used and these are not manipulated or removed,
- The operating conditions correspond to the technical specifications,
- Inspection and maintenance are performed in accordance with DIN EN 806-5 2012 and DIN EN 14897.
- Repairs are only performed with original spare parts by JUDO customer service or authorised technical personnel.
- All work must only be performed by qualified and authorised technical personnel.

1.4 Type label

The type label is located on the back of the radiation chamber.
So that we can more quickly process questions or orders, please specify the type label data.

2 Safety

2.1.1 Intended use

The JUDO disinfection system is used for disinfecting / sterilising water in rooms not at risk of explosion with non-condensing and non-aggressive atmospheres within the context of the usage options named in these installation and operating instructions.
Intended use also includes the reading of these installation and operating instructions, adherence to all the safety conditions and instructions contained within them and the performance of inspection and maintenance work at the prescribed time intervals.

Attention
Other uses are not compliant with the intended use and not permitted!
JUDO Wasseraufbereitung GmbH will not be responsible for the resulting damage, the operator alone bears the risk!

2.2 Duties of the operator

The operator of the JUDO disinfection system is responsible for the following:

- Only allow qualified and authorised technical personnel to perform inspection, operation, maintenance, service and repair as well as the training of the operating personnel.
- Performance of inspection and instigation of scheduled servicing at the prescribed intervals (adhere to DIN EN 806-5:2012 and DIN EN 14897).
- Constant availability of the installation and operating instructions at the place of use of the JUDO disinfection system.

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- Perform regular visual inspection of the JUDO disinfection system according to the conditions of use and the hazard potential to prevent leaks and damage and also check for correct functioning of the system.
- Regularly check wear parts, choose the cleaning medium and clean.

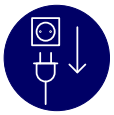
2.3 Symbols and their meaning

2.3.1 Hazard notes in the installation and operating instructions

Symbol	Meaning	Symbol	Meaning
	**Warning** Danger due to electric voltage!		**Warning** Danger to eyes and skin from UVC radiation!
	**Warning** Risk of injuries!		**Attention** Risk of malfunctions or damage!

Tab. 2: Hazard warnings

2.3.2 General notes in the installation and operating instructions

Symbol	Meaning	Symbol	Meaning
	Read and understand the installation and operating instructions!		Disconnect from the mains before working on the system!
	General information and user tips!		Correct disposal of scrap and operating resources!

Tab. 3: General notes

2.3.3 Personal protective equipment

Symbol	Meaning	Symbol	Meaning
	Wear a face shield!		Wear protective gloves!
	Wear protective clothing!		

Tab. 4: Symbols and their meaning

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2.4 General safety instructions

Warning
Any working methods that might endanger safety must be avoided!
Non-observation of these installation and operating instructions and the safety instructions herein may endanger persons as well as the environment and the JUDO disinfection system itself.

The safety instructions do not take into account

- Random happenings and events that may occur during installation, operating and maintenance,
- Location related safety conditions for the observance of which the operator is responsible, even for contract installation personnel.

Attention
Unauthorised conversions and changes to the JUDO disinfection system or tampering with system components are forbidden for safety reasons!
Do not perform any changes, make any additions or carry out any conversions that could impair safety without the manufacturer's written approval!
Never remove safety equipment or deactivate it by making changes to the JUDO disinfection system!
The safety instructions of these installation and operating instructions must be observed without fail, additional industry-wide and in-house safety instructions remain in force!
Only operate the JUDO disinfection system with the caps and covers of all system components correctly closed!
Fault-free operation of the JUDO disinfection system is only ensured if original spare parts and components are used in the combination described in these installation and operating instructions, otherwise there is a risk of malfunctioning or damage!
Only allow authorised technical personnel to carry out repairs!
All work on electrical system components must only be performed by qualified electricians certified according to an approved national scheme!
The electrical system components must be checked regularly!
Loose connections must be tightened immediately and damaged system components immediately replaced!

Warning
Without the protective measure mentioned below, eyes can be damaged (painful eye infection, comparable to injury caused by welding) after only a few seconds, even from a distance of several metres. After several minutes, skin can be damaged as well by the UVC radiation (comparable to a sunburn).
These injuries usually do not become apparent until several hours later.

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Do not remove the UVC lamp from the radiation chamber or operate it outside the radiation chamber while operating the JUDO UV disinfection system, as this may cause severe damage to health!

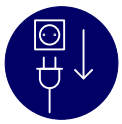
To protect your eyes and facial skin from UVC radiation and glass fragments, always wear a face shield when working at an activated JUDO UV disinfection system!

Always wear protective clothing with sufficient UV protection when working at an activated JUDO disinfection system.

Likewise, wear cut-resistant gloves that have sufficient UV protection and protect against cuts.

2.4.1 Safety instructions for electrical work

Warning
Switch off the power supply before working on system components; if this is ignored severe bodily injuries or even death may result!
Wait at least 5 min. after the power supply has been disconnected before opening the control unit (electric discharge)!
Mains voltage can still be applied to external connecting cables even if the control unit is voltage-free!
Do not disconnect or cut off the potential equalization line and protective conductor terminal.
All work which may possibly need to be performed while the system is live must only be performed by qualified electricians certified according to an approved national scheme!



Switch off the power supply before working on system components and wait at least 5 min. until the electronic components have discharged!

Attention
Ensure that electronic or electrical system components are not damaged by splash water or similar!

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2.4.2 Safety instructions for mechanical working

Warning
Before cleaning, maintenance or repair work ensure that the JUDO UV disinfection system is de-energised, hydraulically depressurised and drained!

These activities must only be performed by JUDO customer service or authorised technical personnel, who know and understand the overall system of the JUDO disinfection system and its environment!

2.4.3 Safety instructions for the handling of chemicals (cleaning agents)

Warning
The safety data sheets of the manufacturer of the cleaning agents, the respective usage guidelines and application instructions as well as safety measures must be observed when handling chemicals!

3 Transport, storage, disposal

Attention
Transport the JUDO disinfection system with care, do not transport when there is a risk of frost, also protect against dust and dirt effects!
Do not damage fragile components (quartz tube, UVC lamp, possibly UV sensor)!

Attention
Dry, frost-proof storage location with aggressive atmosphere!
Protect the JUDO UV disinfection system against coarse dust and dirt as well as UV radiation and direct sunshine!
Do not damage fragile components (quartz tube, UVC lamp, possibly UV sensor)!
Permissible storage temperature: +4 °C to +40 °C!

Electrical and electronic scrap must be disposed of in an environmentally friendly way by a responsible disposal facility or specialist company!
UVC lamps contain small amounts of mercury (amalgam) and must be disposed of unbroken at the appropriate disposal facilities or companies.
Operating resources must be disposed of in accordance with the valid regulations or routed for reuse and recycling (for operating resources that are subject to particular conditions, observe the corresponding instructions on the packaging or obtain the necessary information from the responsible disposal facilities, specialist companies or from the manufacturer/supplier)!

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4 Product information

4.1 Scope of supply

The JUDO UV disinfection system consists of

- Stainless-steel radiation chamber with removable quartz tube (lamp protection tube made of quartz glass) and high-performance UVC lamp with preassembled connection cable.
- Microprocessor control with LC display including wall bracket and power cable and safety plug.
- UV sensor with integrated temperature measurement and preassembled connection cable including installation tool.
- Installation and operating instructions.

Using your order, check the supplied parts for completeness and sound condition!
The product is supplied fully assembled!
Damage caused by transport must be reported inside 24 hours, otherwise no damage claims can be settled for insurance reasons!

4.2 Application

The JUDO UV disinfection system is used to disinfect or rather sterilise water, but is not approved for the production of drinking water or the maintenance of drinking water quality in Germany or Austria (the DVGW or ÖVGW-tested JUDO UV disinfection systems are available for this; technical advise necessary).

Attention
The operator is responsible for ensuring that the JUDO disinfection systems are only used for the purposes described in the usage guidelines!
In the event of failure to comply, JUDO Wasseraufbereitung GmbH will not be responsible for the resulting damage, the operator alone bears the risk!

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4.2.1 Overview

Fig. 1: Overview

1	Lamp cable with plug	4	Inlet
2	Radiation tube (reactor)	5	Draining
3	Control	6	Outlet

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4.3 Technical data

General Information	JUV 200 GS
Max. flow rate*	20
UVC transmittance	99%- 1cm
UVC dose	400
Water Temperature range	5 - 50
Total consumption	266
Mounting	Vertival
Material	Stainless Steel 304 (optional 316L)
Connections	Thread 2” M
Drain/Air Valve	1/8” ½” M thread
Total Volume	14,2
Total weight	12 kg
Max working pressure	10 bars g
Protection class	IP 54
Shape	Z
Flow direction	From bottom to top
Cleaning system	Optional
Quartz sleeve cleaning system Manual	Availabe – RM version (only SS 316L)
UV Lamp	
Number	3
Lifespan**	9000 hr
Lamp power	80 W
Type	HO LP lamp type 028124
UV SENSOR (ONLY on PLUS MODELS)	
Type	UVC selective sensor Mod. UV737
Sensor Cable	Shielded cable 4 meters
Sensor holder material	Stainless steel 316L

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CONTROL PANEL	
Material and colour	Painted Steel – RAL 7035
Dimensions	400 x 300 x 200 mm
Protection class	IP 54
Ambient temperature range	5 – 45 °C
Power supply	230 V - 50/60 Hz (115V – 50/60 Hz on request)
Lamp cable	1 m
Power supply cable	1 m
Monitor display	LCD SITA
Hour meter	Yes for total system life
Resettable hour meter	Yes for lamp life control
Lamp function control	Yes
Alarm led	Yes
Free contact (NO - NC)	Yes – general alarm (max 2 A)
230 V output (NO - NC)	Yes – general alarm (max 2 A)
Remote ON/OFF contact	Yes (settable)
ON/OFF Timer	Yes (settable)
Reactor temperature measurement and alarm	Yes (°C) – settable value (shut off for high temperature) on PLUS MODELS
UV Irradiance measurement and alarm	Yes (% or W/m^2 optional) – settable value on PLUS MODELS
4/20 mA output	Optional – for Irradiance and water temperature on PLUS MODELS
Audio alarm	Optional

Tab. 5: Technical data

*** As compared to 96% UV transmission based on a layer thickness of 1 cm**
In the case of different flow rates, temperatures or water qualities, the values are different (technical advice necessary).
**** May be significantly low depending on the operating conditions and water quality.**

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4.4 Dimensions

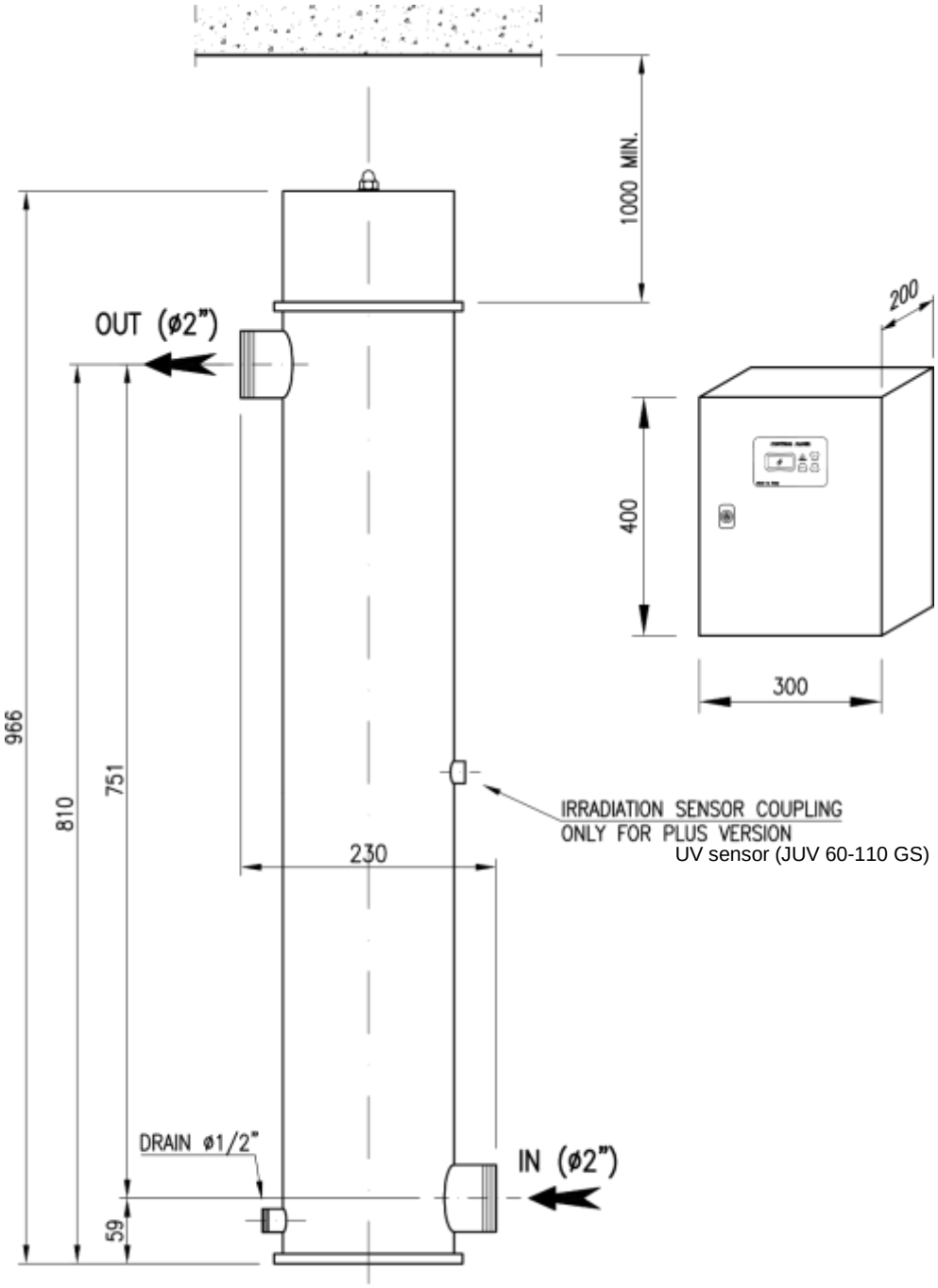

Fig. 2: JUV 200 GS

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4.5 Operating resources

Designation	Order no.
Cleaning agent concentrate (38% phosphoric acid, 2x 1 litre)	8721216

Tab. 6: Operating resources

Operating resources are not supplied!

4.6 Accessories

Designation	Order no.
JUDO solenoid valve with time control JEM-AT ⅜" (flush valve)	8351008
JUDO solenoid shut-off valve JEM 1½" (service valve)	8735116
JUDO solenoid shut-off valve JEM 2" (service valve)	8735117
JUDO sampling valve ¼" external thread (flame-resistant, DVGW-approvedl)	8351027

Tab. 7: Accessories

Accessories are not supplied!

4.7 Function description

Disinfection with light (UV) is an effective, efficient and especially environmentally friendly process.
UV light kills pathogenic microorganisms within a few seconds without leaving any residues, harmful by-products, odours or affecting taste. There is also no risk for employees tasked with handling hazardous chemicals.
The effect of UV light is exploited by using especially effective UVC radiation (**λ**=254 nm). The radiation causes an immediate photochemical reaction in the DNA (deoxyribonucleic acid), which is vital to all microorganisms. This either kills the microorganism or destroys its reproduction capability.
The reduction rate depends on the minimum UV radiation (UV dose), in other words, the time a microorganism is exposed to a certain level of UV radiation (W/m²).
To safely disinfect drinking water, a UV dose of 400 J/m² is required. This reduces the most important human pathogenic bacteria, parasites and viruses by a power of 4.
The disinfection capacity of a UV disinfection system depends primarily on whether each volume element receives the required UV dose when it flows through the radiation chamber (reactor). To ensure that this is the case, the radiation field and hydraulics in the JUDO UV disinfection system are optimally tuned to one another.
The UV radiation with the UV doses used for the disinfection does not result in any adverse secondary reactions. Since UV radiation does not add any disinfecting substance to the water, there is no repository effect after the water has passed through the chamber.

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4.7.1 Remote input

The UVC lamp can be switched on and off via a potential-free contact (e.g. flowmeter, timer, GLT, etc.) to be connected to the Remote input by the customer.

Attention
If the UVC lamp is switched on via the Remote input, any 230 VAC service valve connected at the output will remain open.
Make sure that the maximum permissible switch interval (3x per day) is not exceeded, since frequent turning on and off will significantly reduce the life of the UVC lamp (see Section 6.2.4 for possible delay time).
Factory setting is N/O. This setting ensures unit operation even when the remote ON/OFF contact is not in use.
In the event of failure to comply, JUDO Wasseraufbereitung GmbH will not be responsible for the resulting damage, the operator alone bears the risk!

4.7.2 Function monitoring

The monitoring system reacts immediately if the UVC lamp fails and/or its radiation strength is too low. The system essentially consists of analysis electronics, an alarm status indicator, text display and UV sensor.
The permanent measurement of the UV radiation strength (254 nm) combined with the function monitoring of the UVC lamp, ensure a high level of reliability with the JUV 200 GS model. The alarm threshold for the UV radiation strength permanently set by the customer ensures the correct minimum UV dose.
The flow can be interrupted via a JUDO solenoid shut-off valve (service valve) connected to the potential-free changeover contact (230 VAC). Faults detected at the potential-free changeover contact can be forwarded to e.g. a building control system.

4.7.3 Radiation chamber

The high level of effectiveness is achieved by ensuring that each volume element receives the required UV dose when it flows through the radiation chamber. Furthermore, the radiation field and hydraulic conditions inside the radiation chamber are tuned to one another.
A UVC lamp is installed axially inside the radiation chamber. The low-pressure lamp is a pressure-tight pressure tube made of UV-permeable quartz glass that is closed on one side. Both the UVC lamp and quartz tube can be replaced in just a few easy steps when carrying out maintenance work.
The UVC lamp is fully enclosed ensuring that no UV light can escape the UV chamber during normal operation. This ensures that operating personnel are not exposed to any risk.
The radiation chamber can be vented at the top and drained at the bottom. To clean, inspect the UV sensor, flow must be interrupted using shut-off valves previously installed by the customer upstream and downstream of the JUDO UV disinfection system. In addition, the complete radiation chamber must be drained.

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5 Installation

Attention
A sufficiently sized floor drain (in accordance with DIN EN 12056) must be installed at the place of use for the eventuality that leaking of the JUDO UV disinfection system or its feed pipe could result in extensive damage!
Additionally we also recommend that the water is shut off if personnel are present in the vicinity of the UV disinfection system!
Assure yourself that prior to connection of the pipes no impurities can enter the UV disinfection system from the pipe system (e.g. residues from installation work)!
Accordingly cleaning of the entire new installation may be necessary!

5.1 Requirements for the place of installation

- The UV disinfection system must be installed in a dry, frost-proof location with a condensation-free and non-aggressive atmosphere.
- Ensure there is enough space available on all sides for installation, maintenance and repair work and also for ready accessibility.

To install and remove the UVC lamp there has to be a clearance of at least 1,100 mm.

- An adequately sized sewer connection in compliance with DIN EN 12056 must be fitted to ensure that the rinse water discharged at certain time intervals or when a certain temperature is reached is drained away without backing up occurring. The same applies to the draining of the radiation chamber and bypass lines. The rinse and/or discharge lines must be of the same size as the rinse and/or discharge connections and routed so they slope continuously downwards to the drain, while at the same time there must be clear outlets above the drain connection.
- An electrical connection (constant voltage, customer provided socket) must be provided in the immediate vicinity of the JUDO disinfection unit.
- For the optional time or temperature-controlled JUDO solenoid valve (see Section 4.6), an additional electrical connection (constant voltage, customer provided socket) must be provided in the immediate vicinity.

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5.1.1 Water quality requirements

Attention
The water to be treated must be clear, free from solid impurities and free from iron and manganese.
UV transmission should be at least 96% and water hardness below 10 °dH based on a layer thickness of 1 cm.
The JUDO UV disinfection system must under no circumstances be operated with water whose specification differs from the water quality mentioned here!
In the event of failure to comply, JUDO Wasseraufbereitung GmbH will not be responsible for the resulting damage, the operator alone bears the risk!

5.2 Installation notes

Attention
The system-specific operating data must be complied with!
Make sure that fragile components (quartz tube, UVC lamp, possibly UV sensor) are not damaged.

A suitable pre-filter system should be installed upstream of the JUDO UV disinfection system to remove suspended solids and dirt.
We recommend that you always install a bypass line fitted with shut-off and drain valves, especially with the JUDO UV disinfection system JUV 200 GS.
The bypass line should start as closely as possible before the inlet of the JUDO UV disinfection system and be returned downstream of the service valve.

- The JUDO UV disinfection system can be connected to the installation using standard commercially available, site-provided, fittings and valves. The connections must be made so that they are leak-tight and free from mechanical stresses.
- To protect the connections from the weight of the JUDO UV disinfection system, suitable supports and/or brackets must be installed by the customer at the radiation chamber and pipes.
- To depressurise the radiation chamber and disconnect it from the pipe system, the JUDO UV disinfection system must be fitted with shut-off valves by the customer. The shut-off valves must be installed in such a way that they are not disabled when installing or removing the radiation chamber.
- A shut-off valve must be installed by the customer at the drain connection.
- In additional, flame-resistant sampling valves must be installed by the customer at the inlet and outlet of the JUDO UV disinfection system.
- Observe the separate installation and operating instructions of other devices and systems.
- Comply with DIN EN 806, DIN EN 12056 and DIN 1988-200.
- Observe technical information, local installation regulations and general guidelines (e.g. EVU, VDE, WVU, DIN, DVGW, ÖVGW, SVGW).

Problem solutions and other installation options can be clarified by a JUDO technical consultation

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5.2.1 Mounting the control unit

The control unit must be mounted to an even wall in the immediate vicinity of the radiation chamber.

The mounting plates included in the delivery allow for flexible mounting to the wall. See Chap. 4.4.2 for the dimensions of the control unit

Decide which way you want to install the mounting plates.	Aligning the control unit

Mounting plate lengthwise

Mounting plate crosswise

Securing the mounting plate

Fig. 3: Aligning the mounting plates

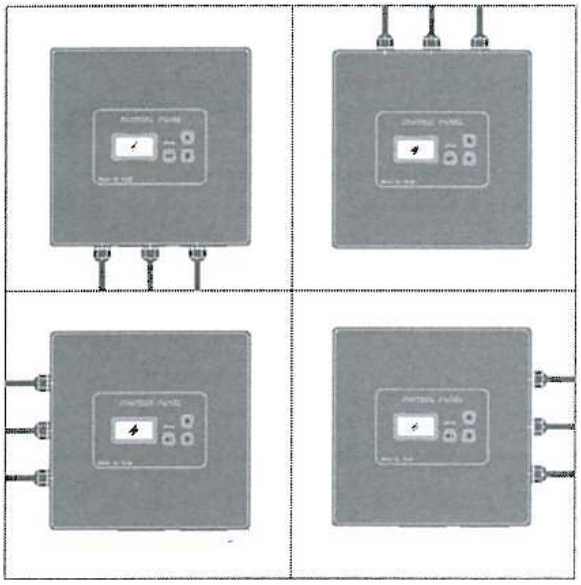

Fig. 4: Aligning the control unit

- **Do not install the control unit below dripping pipes and make sure that the display is at eye level (approx. 1600-1800 mm).**
- **If a lot of condensation occurs at the installation site, use a suitable dehumidifier.**

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The control unit can be mounted at any 90° degree angle to the wall. To ensure that the control unit can be used, the housing cover with the control panel must be adapted accordingly.

- ➔ Insert the mounting plates into the upper two recesses on the rear side of the control unit according to the mounting position.
  Insert either crosswise or lengthwise depending on the mounting position.
- ➔ Secure the mounting plates to the housing using one screw per plate.
- ➔ Mount the control unit to the wall above the mounting plates using appropriate mounting material (not included in the delivery).
- ➔ Unscrew the screws from the housing cover.
- ➔ Remove the cover and turn it accordingly.
- ➔ Secure the housing cover.

5.2.2 Radiation chamber (reactor)

Attention
Pressure shocks and vibrations must not be transferred to the irradiation chamber. Always install the radiation chamber of the JUDO UV disinfection system JUV 200 GS in accordance with Figure 5 and the JUDO UV disinfection system in accordance with Figure 6 (vertical installation with bottom to top flow direction).

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Installation positions:

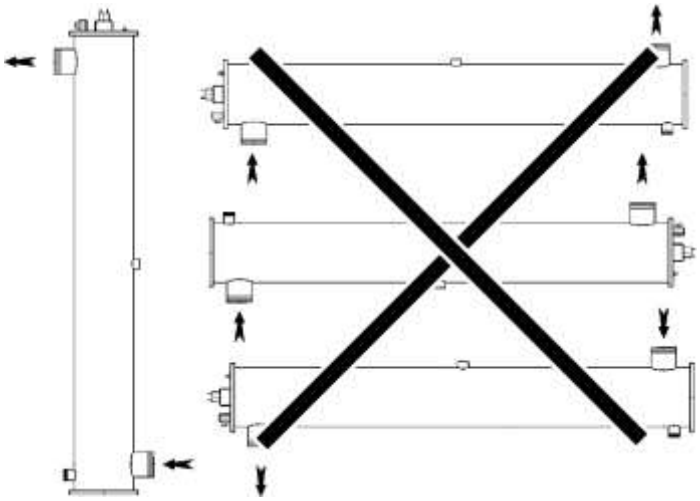

Fig. 5: JUV 200 GS

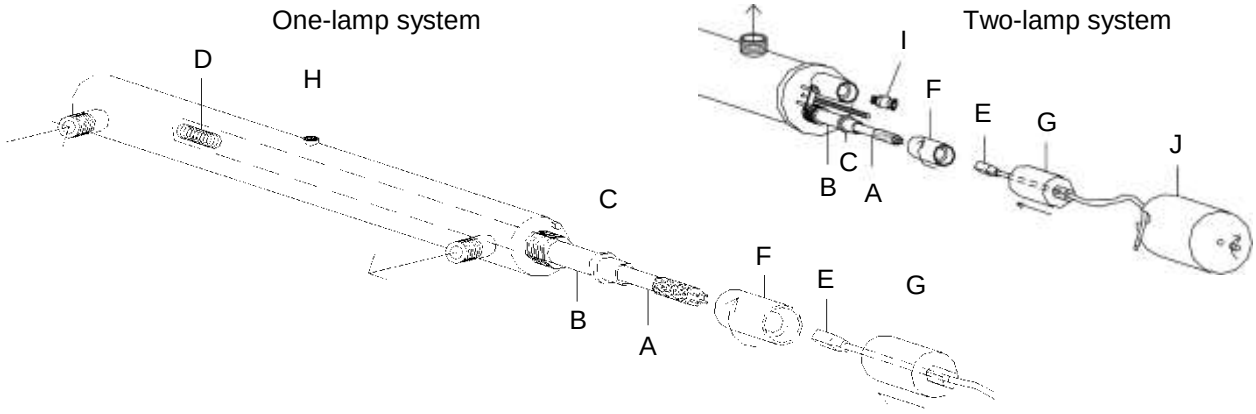

Fig. 7: Radiation chamber components (exemplary presentation)

A	UVC lamp	F	Screw cap
B	Quartz tube	G	Protective cover
C	O-ring (23x4 mm)	H	UV sensor connection, internal thread ¼" (JUV 10-110 GS)
D	Spacer	I	Air vent
E	Connection plug for UVC lamp	J	Stainless-steel cover

5.2.3 Quartz tube, UVC lamp, possibly UV sensor

Attention
Protect the quartz tube, UVC lamp and UV sensor from being damaged or scratched and wipe them clean with a soft cloth before installation (fingerprints or other greasy residues may result in permanent marks).

Install the quartz tube, UVC lamp and UV sensor (if any) according to the installation steps shown below:

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Exemplary installation steps for a one and two-lamp system.

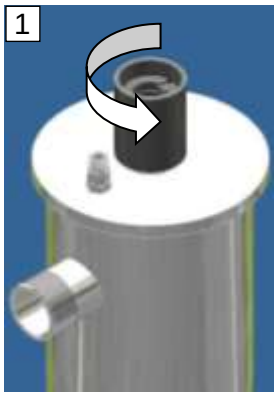

Fig. 8: Screw cap

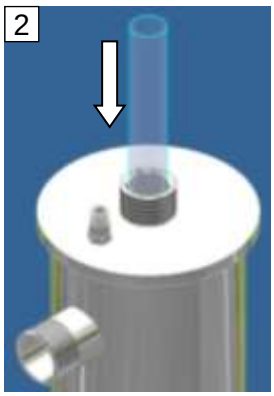

Fig. 9: Quartz tube

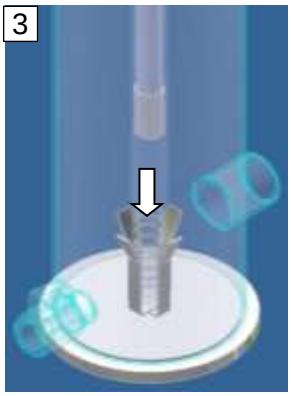

Fig. 10: Spring-loaded guide

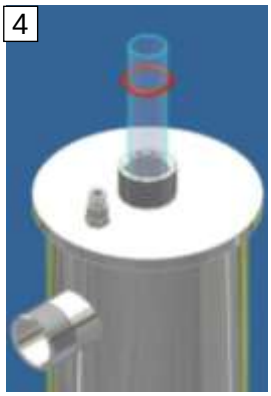

Fig. 11: O-ring

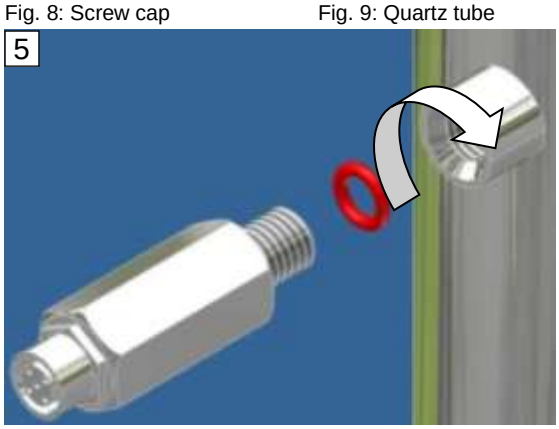

Fig. 12: UV sensor

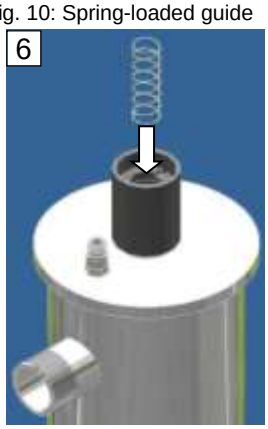

Fig. 13: Spacer

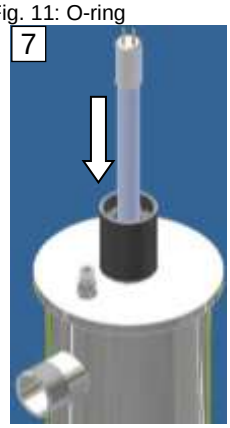

Fig. 14: UVC lamp

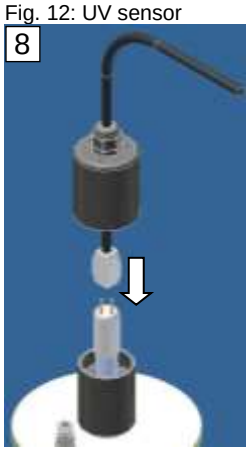

Fig. 15: Connection plug

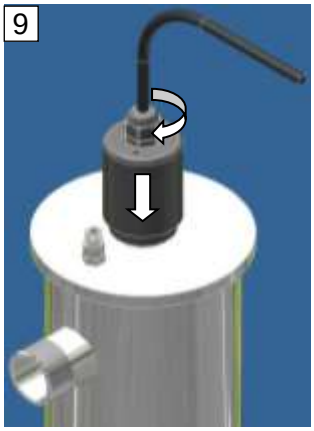

Fig. 16: Protective cover

Fig. 17: Protective conductor

- ➔ Unscrew the screw cap (Fig. 8) from the radiation chamber (↺). Make sure not to lose the O-rings.
- ➔ Carefully insert the quartz tube (Fig. 9) into the radiation chamber and centre it on the spring-loaded guide (Fig. 10) on the floor of the radiation chamber.
- ➔ Carefully place the O-ring (Fig. 11) over the quartz tube.
- ➔ Adjust the screw cap on the quartz tube to create a fit close with the protective cap. Tighten the screw cap by hand (↻, approx. 5 Nm) to create a tight connection with the O-ring.

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With the JUDO UV disinfection systems JUV 200 GS, screw the UV sensor in the radiation chamber (see three steps below).

- ➔ Unscrew (↺) the connection plug from the UV sensor (Fig. 12) and remove.
- ➔ Screw the UV sensor with the O-ring into the internal thread (¼”) on the radiation chamber and tighten by hand (↻, approx. 5 Nm) using the installation tool provided.
- ➔ Re-attach the connection plug to the UV sensor and tighten by hand (↻).
- ➔ Pressurise the radiation chamber and check all connection, the protective cap and quartz tube for tightness.
- ➔ Carefully guide the spacer (Fig. 13) and subsequently the UVC lamp (Fig. 14) into the quartz tube.
- ➔ Connect the UVC lamp with the connection plug (Fig. 15) in accordance with the instructions, slide the protective cover (Fig. 16) towards the radiation chamber as far as it will go and tighten the cable connection.
- ➔ Connect the protective conductor (Fig. 17) to the earth connection of the radiation chamber in accordance with the instructions.

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5.2.4 Installation example

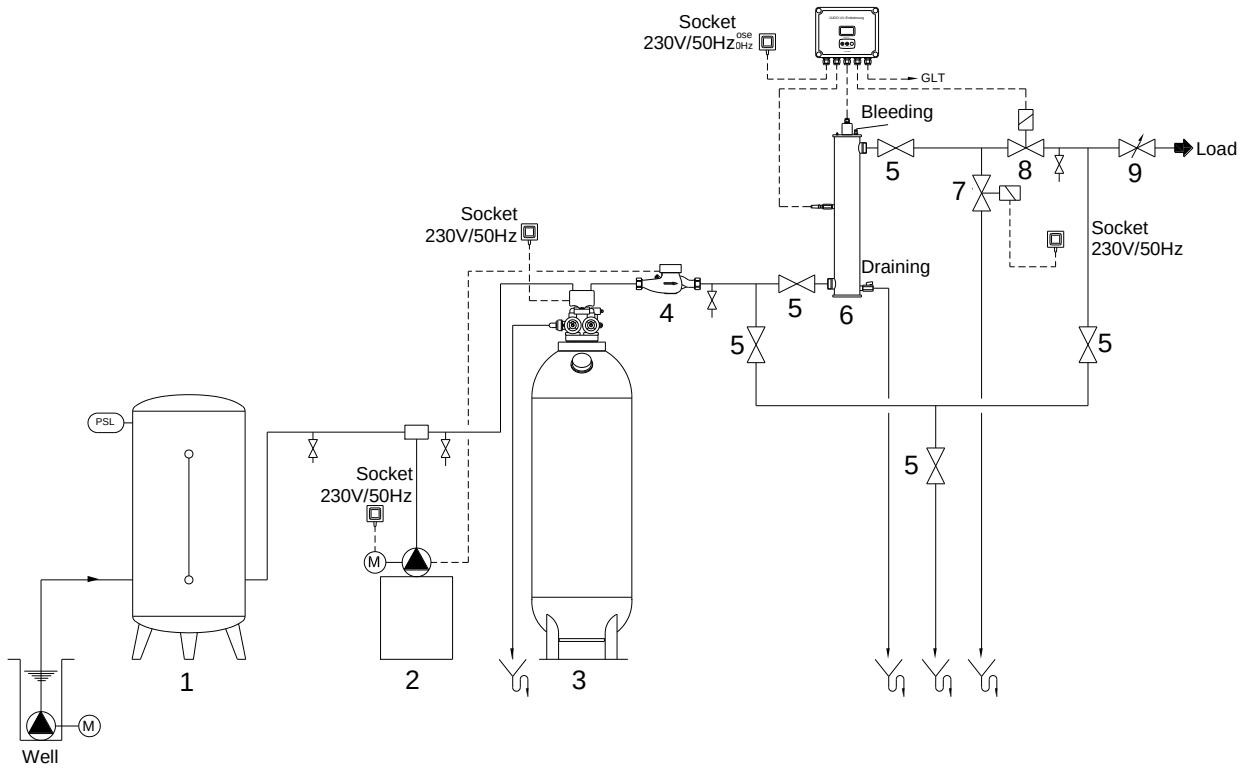

Fig. 22: Installation example

1 Pressure tank (provided by the customer)
2 JUDO WADOS dosing pump system JWD
3 JUDO E-series filter system JEF
4 JUDO contact water meter
5 Shut-off valve (provided by customer)
6 JUDO UV disinfection system JUV
7 JUDO solenoid valve with time control JEM-AT (optional)
8 JUDO solenoid shut-off valve JEM (optional)
9 Flow restrictor (provided by the customer)

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5.3 Electrical connection

Attention
Before connection, check whether the mains voltage required by the JUDO UV disinfection system matches the local circumstances!
All phases of the power supply socket provided by the customer must be protected by a site RCD and an MCB.
Create equipotential bonding between the control unit and radiation chamber (reactor) via the protective conductor terminal.
Only potential-free switching contacts may be connected to the Remote inputs, under no circumstances may external voltage be connected!

Switch off the power supply before working on system components and wait at least 5 min. until the electronic components have discharged!
The control unit is in operation when connected to the mains power.
The control unit is not fitted with a mains switch and must be installed by the customer if required.
Make sure that the connecting cable between the control panel and circuit board is not damaged, jammed or bent when removing or installing the housing cover.

5.3.1 Control unit installation

The control unit of the LCD series is equipped with 4 fixing brackets for wall mounting.

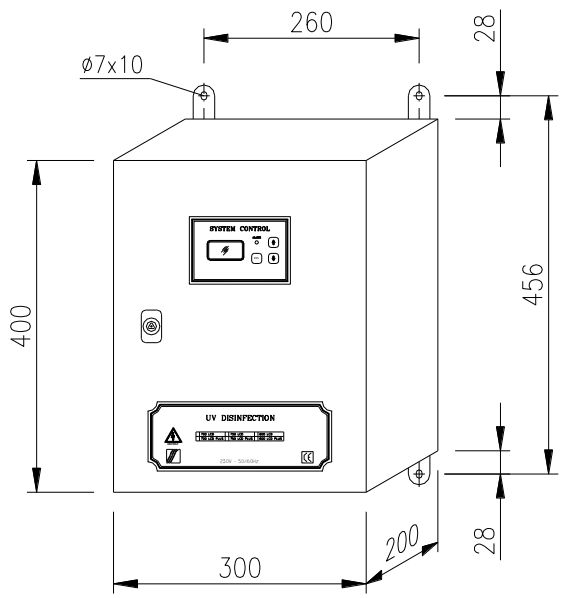

Fig. 18: Control unit

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Connect the lamp socket to the lamp, place the ground wire in the slot along the sleeve bolt and connect its terminal to the M4 bolt welded on the UV chamber, insert the contact cover bringing it up to the beat, then rotate it in closure position.

Fig. 18: Control unit

Finally connect the power cable to the socket. Once connected to the power supply the UV lamp will light on. Do the following at the first start up and on every lamp replacement:

- ➔ Activate the lamp life count down hour meter (see display description)
- ➔ In case of LCD PLUS system with UV sensor then operate the sensor calibration. This operation must be done after at least 5 minutes from lamp start, with quartz sleeve clean, with sensor measuring window clean and with steady water flow.

5.3.2 Switch ON / Switch OFF the lamps

Because of the small power of the electrical panel this is not equipped with power selector. Therefore the panel is always powered but lamps can be switch ON/OFF in the following ways:

- ➔ Keeping pushed the OK (◄┘) button for 5 seconds (see display description)
- ➔ Closing the remote ON/OFF contact (see electrical scheme)

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6 Description of the control unit

6.1 Rack LCD electrical panel - Internal lay-out

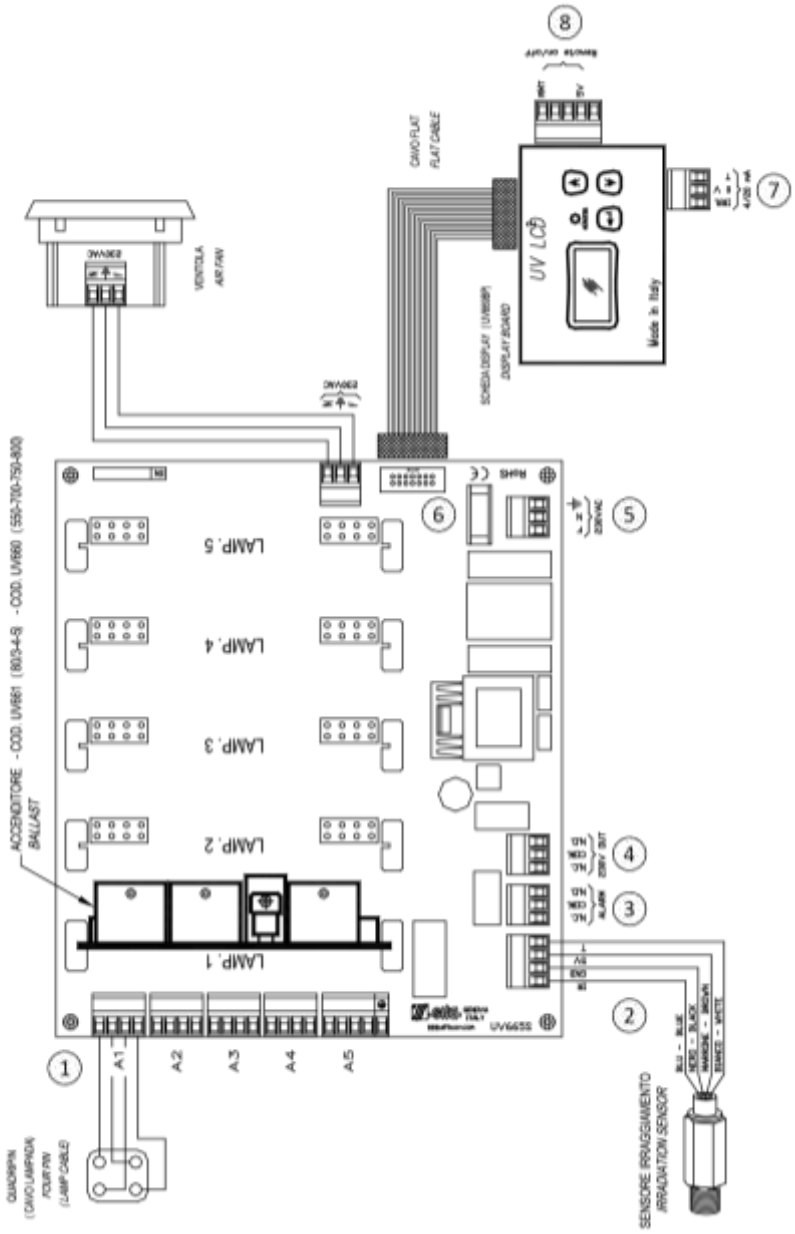

Fig. 19: Control unit

1	Terminal for UV-C Lamp cable	5	230 V power supply
2	Terminal for irradiation sensor cable connection (if forseen)	6	Glass fuse, delayed, 5x20, 3,15A
3	Free contact alarm (NO-NC)	7	4/20 mA contact
4	230 V alarm (NO/NC) max. 2A	8	Remote ON/OFF – no contact (contact settable)

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6.2 LCD Display board Description

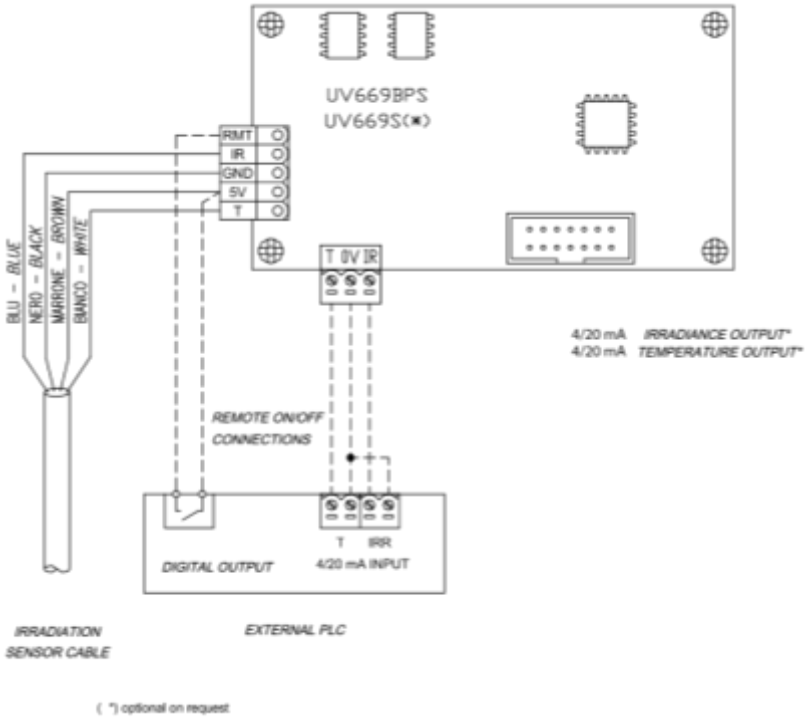
Following are described the standard and optional terminals connection to the display board:

- ➔ It is possible to connect the sensor cable (usually this is connected on the main board).
- ➔ It is possible to connect the REMOTE ON/OFF contact, this is powered with 5Vdc that if closed to the RMT contact shuts of the lamps. The user can set the working of the remote ON/OFF contact by the display between N/O and N/C. The factory setting is N/O because it let the system working with nothing connected to the remote ON/OFF terminal.

Attention
To high frequency of ON/OFF decreases the lamp lifespan. Max 3 ON/OFF cycles per day are allowed. This setting decreases the useless shut off for short water flow stops
Increase/decrease values pressing arrows

- ➔ In case of LCD PLUS systems with optional 4/20 mA output then it's possible to connect to the 4/20 mA terminal. This signal is available for the water temperature and the UV irradiance.
  The temperature signal has the following correspondence:
  4mA = 0°C
  20 mA = 100 °C
  The irradiance signal has the following correspondence:
  4mA = 0%
  20 mA = Settable value on the display (factory setting 20 mA= 100%)

Important
The 4/20 mA output signal can work with a max load of 150 ohm



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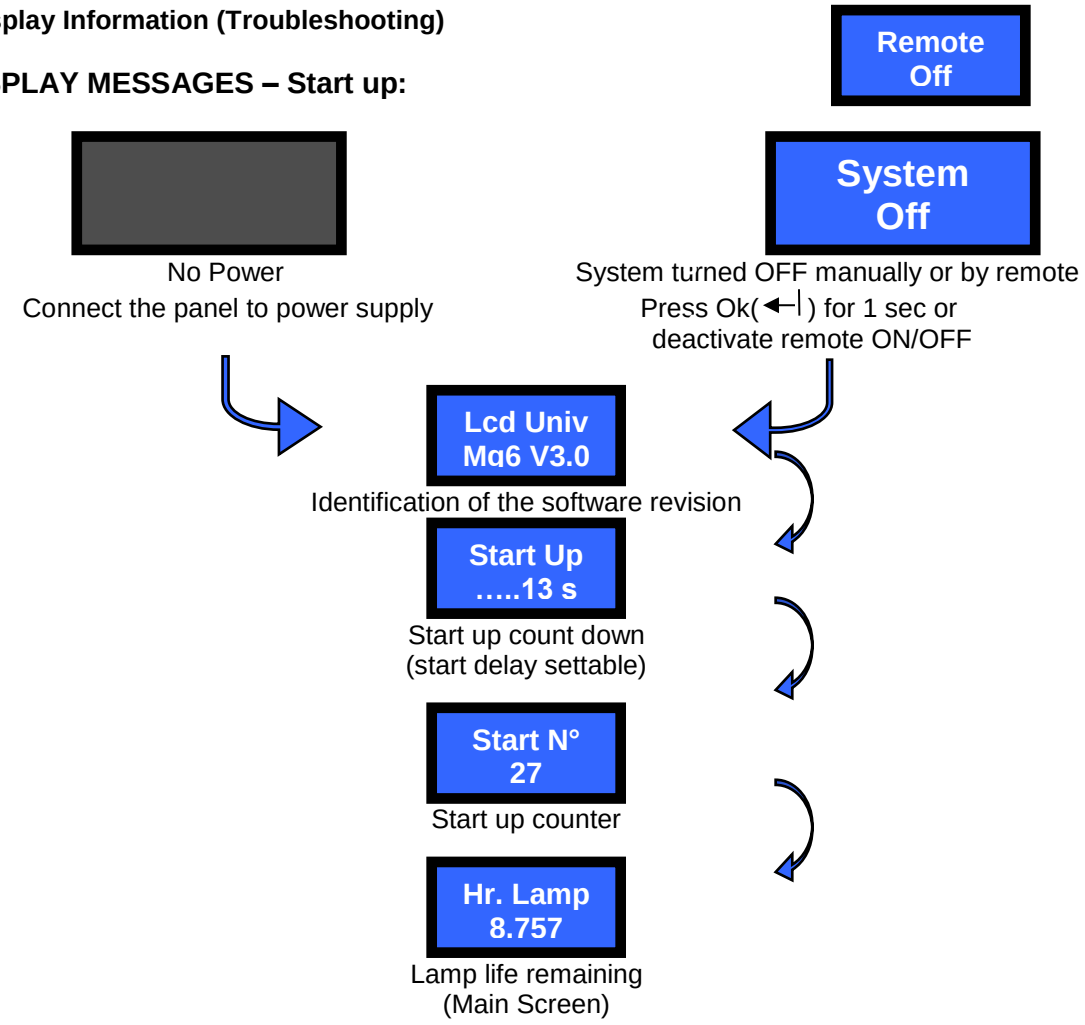
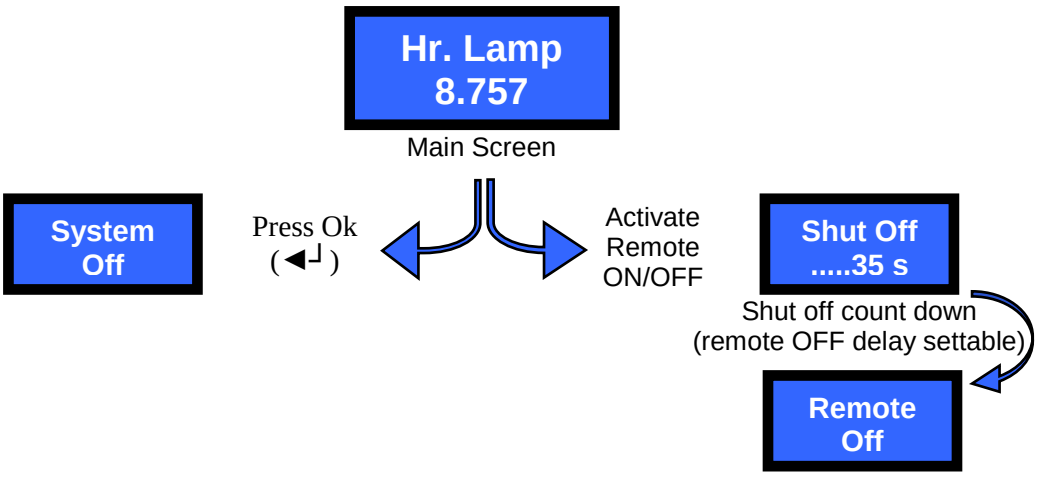
6.3 Display Information (Troubleshooting)

LCD DISPLAY MESSAGES – Start up:



LCD DISPLAY MESSAGES – Shut Off:



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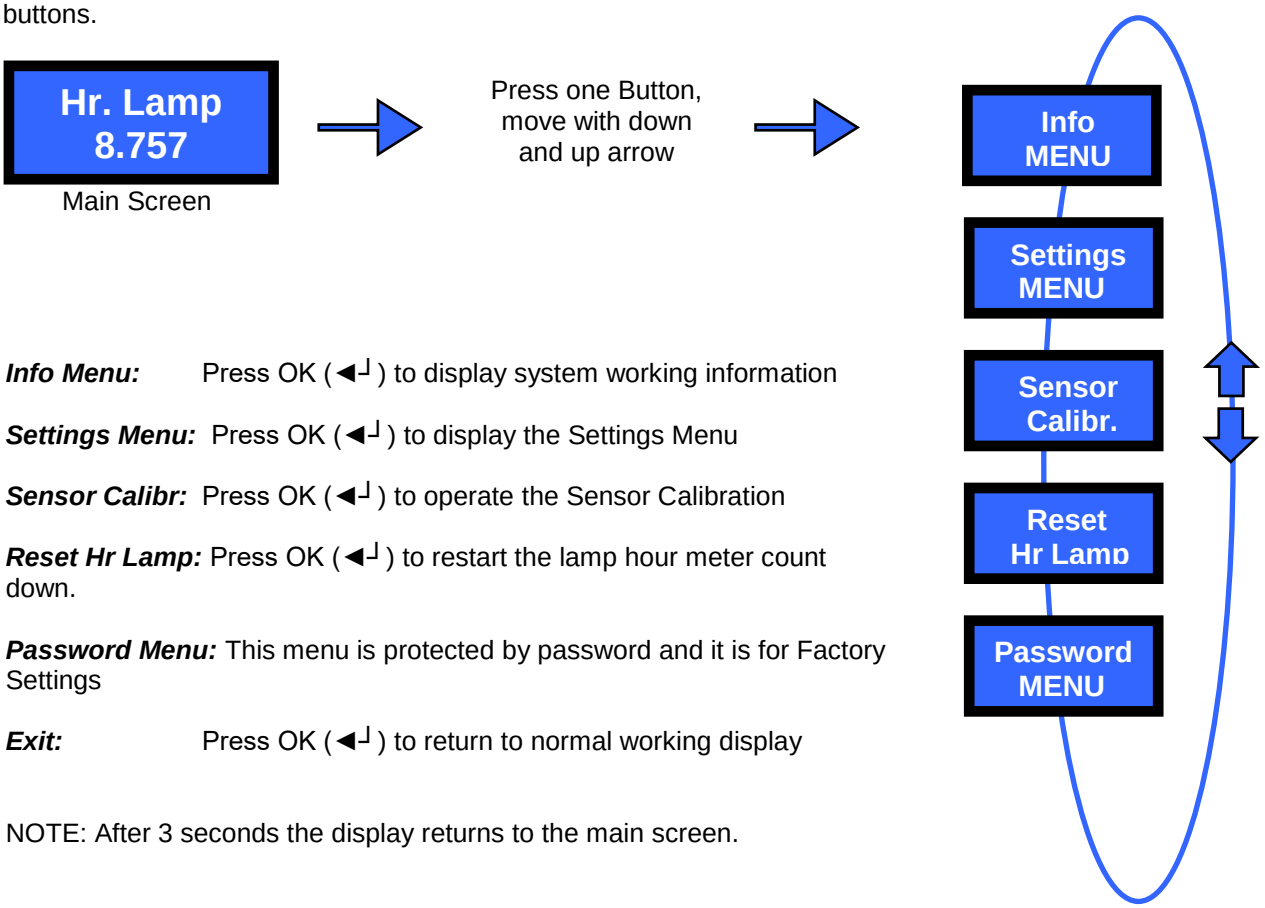
LCD DISPLAY MESSAGES – Main MENU:

The main MENU describes the main functions of the control Panel
To enter the main menus push one of the 3 buttons. Move trough the menus using up and down arrow buttons.



Info Menu: Press OK (◄┘) to display system working information

Settings Menu: Press OK (◄┘) to display the Settings Menu

Sensor Calibr: Press OK (◄┘) to operate the Sensor Calibration

Reset Hr Lamp: Press OK (◄┘) to restart the lamp hour meter count down.

Password Menu: This menu is protected by password and it is for Factory Settings

Exit: Press OK (◄┘) to return to normal working display

NOTE: After 3 seconds the display returns to the main screen.

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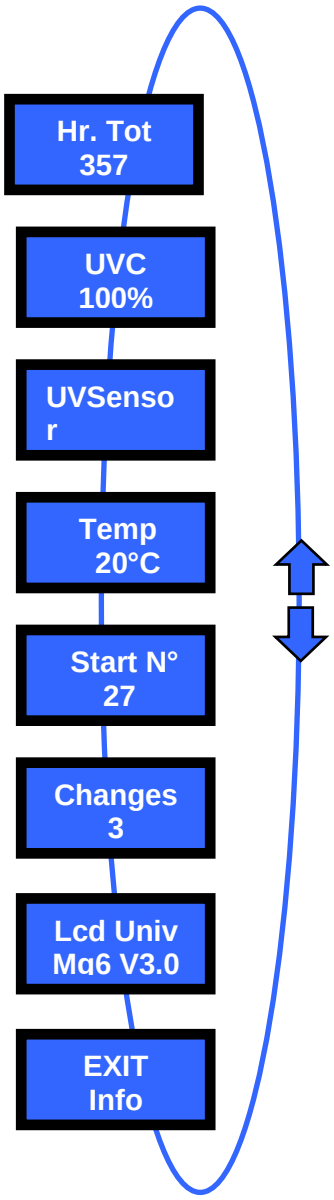
LCD DISPLAY MESSAGES – Info MENU:

Info MENU

Main Screen

→ Press Ok (◄┘) button, move with down and up arrow →



Hr. Tot: Displays the system working hours

UVC: Displays the UVC Intensity (only LCD PLUS)

UVSensor: Displays the signal coming from the UV sensor (only LCD PLUS)

Temp: Displays the water temperature (only LCD PLUS)

Start N°: Displays the number of start up

Changes: Displays the number of lamp changes

Software Rev: Displays the software revision

Exit Info: Press OK (◄┘) to return to normal working display

NOTE: The display <u>does not</u> return automatically to the main screen. Therefore the user can let the choosen screen as standard visualizing.

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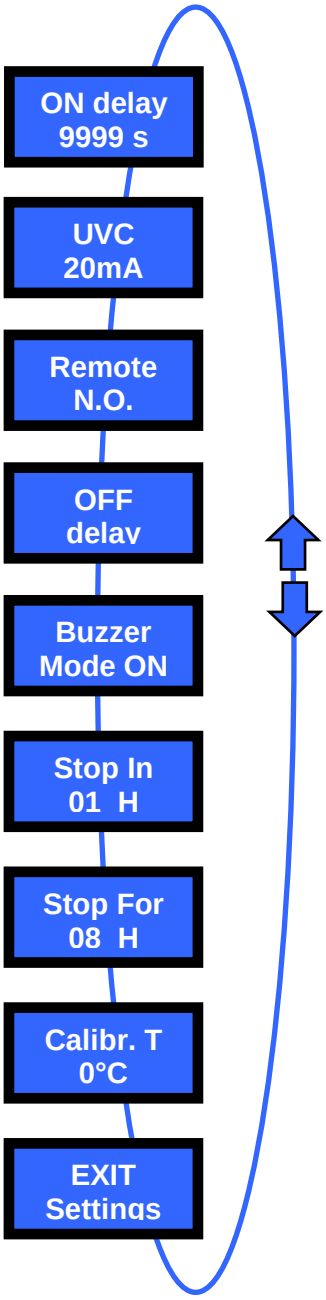
LCD DISPLAY MESSAGES – Settings MENU:

Settings MENU

Main Screen

Press Ok (◄┘)) button, move with down and up arrow



ON delay: Press OK (◄┘) to set the start delay. This value is expressed in seconds. It allows to start the lamp and wait for the alarm warm up without alarms.
Increase/decrease values pressing arrows

UVC 20mA: Press OK (◄┘) to set the correspondence between 20 mA output and irradiance read from the UV sensor. The 4/20 mA output is optional on request available on the LCD PLUS models. Increase/decrease values pressing arrows

Remote: Press OK (◄┘) to set the remote ON/OFF working between NO and NC (NO = Normally Open, NC = Normally Closed).
Change settings pushing OK.

OFF delay: Press OK (◄┘) to set the remote shut off delay. This value is expressed in seconds. In case the remote ON/OFF is connected to a flow switch then this settings avoid shut OFF if water flow stops only for few seconds.
NOTE: To high frequency of ON/OFF decreases the lamp lifespan. Max 3 ON/OFF cycles per day are allowed.
This setting decreases the useless shut off for short water flow stops
Increase/decrease values pressing arrows

Buzzer: Press OK (◄┘)to set the 230V output in buzzer mode. If a buzzer is connected to the 230V alarm then, in case of alarm the 230V output is set to drive the buzzer in intermittent operation (5 seconds ON, 5 minutes OFF).

Stop In: Press OK (◄┘)to set how soon the system will turn off automatically. After the first turn off the system will turn off the next day at the same time. Increase/decrease values pressing arrows. If Stop In value is set = 0 then the timer is deactivated.

Stop For: Press OK (◄┘)to set how long the system will remain off before automatic restart. Increase/decrease values pressing arrows. If Stop In value is set = 0 then the timer is deactivated.

Calibr. T: Press OK (◄┘) to set the water temperature if the sensor is not calibrated.

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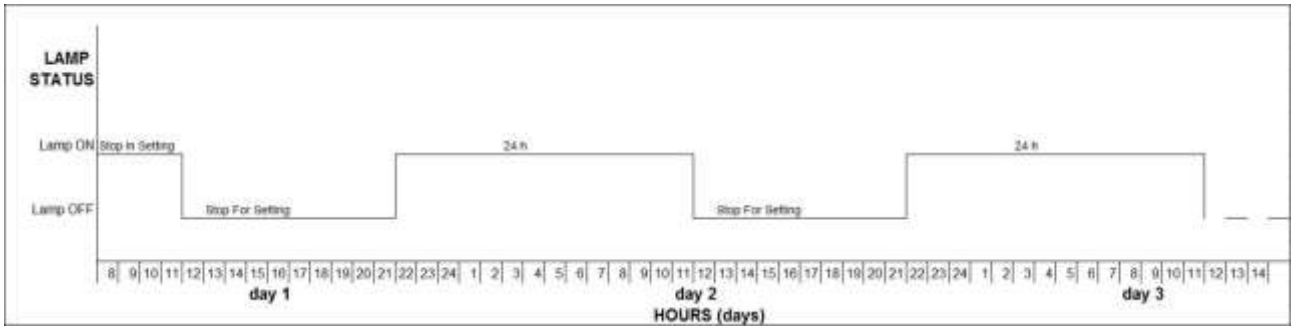

Timer Diagram example with *Stop In* set to 4 hours and *Stop For* set to 10 hours.

Exit: Press OK (◄┘) to return to normal working display
NOTE: After 3 seconds the display returns to the main screen.

LCD DISPLAY MESSAGES – Sensor Calibr. (Only PLUS version):

This operation must be done at the first start up and on every lamp replacement, with quartz sleeves and sensor measuring window clean. Wait 5 minutes from the lamp start before operating the sensor calibration.

Sensor Calibr. → Press Ok (◄┘) button → **Calibr. OK**

Press OK (◄─┤) to complete the calibration

100% Set

Calibration procedure completed

LCD DISPLAY MESSAGES –Reset Hr Lamp.:

This operation starts the count down of the lamp life hour meter. This operation must be done at the first lamp start and on every lamp replacement

Reset Hr Lamp → Press Ok (◄┘) button, move with down and up arrow → **New Lamps**

Press OK (◄─┤) to confirm.
Press down arrow or up arrow to exit

Hr Lamp 9000

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LCD DISPLAY MESSAGES – Alarms/troubleshooting:

In case of any alarm the red LED is flashing.

List of alarms:

Lamp Off

Indicates the lamp failure. If the system has 2 lamps the failed lamp is identified. Check:

- ➔ Connection to the lamp
- ➔ If lamp has failed (by testing another lamp)
- ➔ If lamp ballast has failed (see section replace the ballast)

Change Lamps

Indicates that the count-down hour meter of lamps life comes to zero. In such case replace the lamps and restart lamp hour.

Only for Plus

Low UVC %

Indicates low irradiation. Check:

- ➔ If lamp life has expired
- ➔ If quartz sleeves are dirty
- ➔ If sensor windows is dirty
- ➔ If water quality has changed

High Temper.

Indicates high temperature in the UV chamber. This may happen when either there is no flow or there is air in the UV chamber. In such cases the system switches off.
Reset the alarm: Push OK(◄┘) for 5 sec to put the system in standby then press OK (◄┘) again to restart the UV system.
NOTE: In case of high temperature the panel turns off the lamp and this remains off even if temperature drops below the threshold level. This is necessary in case of no flow to avoid this cycling:
Lamp ON→ High Temperature→lamp turned off→Temperautre lower then threshold→ lamp started again→ High Temperature→….
This can destroy the UV lamp, in case the user can accept this risk then ask the factory for setting change instructions.

LCD DISPLAY MESSAGES – Other Problems:

Display OFF in case of no electrical feeding or burned fuses

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7 Commissioning

Attention
Prerequisite for commissioning is the correct installation of the JUDO disinfection system plus all system components!
The UVC lamp is designed for continuous operation and thus achieves the greatest disinfection effect. Frequent switching on and off reduces its standby time.
Operating the UVC lamp in an empty radiation chamber or with flow disabled will result in an increased temperature after only a few minutes and damage system components.

The commissioning must only be performed by JUDO customer service or authorised technical personnel!
The transfer confirmation must be carefully filled out upon commissioning!
Observe the separate installation and operating instructions of other devices and systems!

7.1 Initial commissioning

Attention
After initial commissioning, the water downstream of the UV disinfection system must be discharged into the drain for at least 10 minutes.

During initial commissioning, it must be ensured that

- no visible damage is present on the JUDO disinfection system or its system components,
- all connections are checked for leak-tightness,
- the electrical connections are correctly made.

➔ Fill the radiation chamber with water by slowly opening the shut-off valve on the supply line of the UV disinfection system.
➔ If there is no automatic air vent, open the vent screw slightly and completely vent the radiation chamber.
➔ Close the vent screw and check the radiation chamber's flange connections, quartz tube and UV sensor connection for tightness.
➔ If everything is tight you can completely open the inlet and outlet shut-off valves.

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8 Operation

The correct operation of the JUDO disinfection system and the dosing concentration must be checked at regular intervals by the operator!

9 Removal from service

Attention
If the JUDO UV disinfection system is shut down or removed from service it must be hydraulically depressurised and deenergised.
The radiation chamber must be completely drained.
The quartz tube and the UV sensor must be checked for soiling and cleaned if necessary.
If you have any other questions, we recommend that you contact our technical department.

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10 Faults

Fault	Cause	Remedy
LED alarm and display LOW UVC %	Dirty quartz tube and/or UV sensor surface	Clean quartz tube and/or UV sensor surface
	UV transmission of water too low, changed water parameters	Technical advice necessary
LED alarm and display HIGH TEMPER.	Air in radiation chamber	Vent radiation chamber
	Flow interrupted or too low	Ensure proper flow
UV radiation strength illogical	Air in radiation chamber	Vent radiation chamber
UVC lamp does not ignite	Water temperature < 5 °C	Ensure required water temperature

Tab. 8: Mechanical or hydraulic faults

Fault	Cause	Remedy
Control unit not working	Power failure	Check site-provided fuse
	Device fuse blown	Replace device fuse
	Control unit faulty and/or defective.	Check control unit, replace as necessary (JUDO customer service)
UVC lamp does not ignite	Connecting cable faulty	Check connecting cable, replace if necessary
	UVC lamp faulty and/or defective	Check UVC lamp, replace if necessary (JUDO customer service)
	Ballast or ignition device and/or heating transformer faulty or defective	Replace control unit (JUDO customer service)
	Power supply < 200VAC	Ensure required power supply.
LED alarm and display LAMP OFF	UVC lamp faulty and/or defective	Check UVC lamp, replace if necessary (JUDO customer service)
LED alarm and display CHANGE LAMPS	UVC lamp life expired	Replace UVC lamp, reset countdown (JUDO customer service)
LED alarm and display LOW UVC %	UVC lamp life expired	Replace UVC lamp, reset countdown (JUDO customer service)
	Quartz tube dirty	Clean quartz tube (JUDO customer service)
	UV sensor surface dirty	Clean UV sensor (JUDO customer service)
LED alarm	UV sensor faulty and/or defective	Check UVC sensor, replace if necessary (JUDO customer service)
UV radiation strength illogical	Power supply fluctuations	Check power supply
	External sensor signal fault or electronics fault	Check surrounding electrical installations (e.g. frequency converter, etc.)

Tab. 9: Electrical faults

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If a fault cannot be rectified based on the information in Tables 10 - 11, contact your JUDO customer service representative or an authorised specialist company.

	JUDO Wasseraufbereitung GmbH		JUDO Wasseraufbereitung AG
	Winnenden Works	**Austrian subsidiary**	
Address:	Hohreuschstraße 39-41 D-71364 Winnenden	Zur Schleuse 5 A-2000 Stockerau	Industriestrasse 15 CH-4410 Liestal
Phone:	+49 (0)7195-692-0	+43 (0)2266-640-78	+41 (0)61-90640-50
Fax:	+49 (0)7195-692-188	+43 (0)2266-640-79	+41 (0)61-90640-59
Email:	info@judo.eu	info@judo-online.at	info@judo-online.ch
Internet:	www.judo.eu	www.judo-online.at	www.judo-online.ch

Installation company:

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11 Inspection, maintenance, service

Warning
Risk of injury!
Before cleaning, maintenance or repair work ensure that the JUDO UV disinfection system is hydraulically depressurised and completely drained!
Disconnect from the power supply before working on system components and wait at least 5 min. until the electronic components have discharged!
Never expose eyes to UVC radiation without wearing safety glasses.
Never use the UVC lamp outside the radiation chamber.
Never look into the sensor screw connection while the UVC lamp is still on.
Wear cut-resistant gloves when installing or removing the quartz tube.

Warning
Make sure the quartz tube is not scratched. The UV disinfection system must not be operated with a scratched quartz tube. A scratched quartz tube must be replaced immediately.

Servicing and maintenance could only be performed by JUDO customer service or authorised technical personnel and while adhering to the applicable safety conditions! Orderly and systematically performed servicing is the underlying requirement for a fault-free long service life of the JUDO UV disinfection system (observe DIN EN 806-5:2012 and DIN EN 14897)!
The attached maintenance log (see Chap. 10.7) serves as a template for the creation and orderly keeping of an on-going maintenance book!

According to DIN EN 806-5:2012, every technical plant requires regular servicing and inspection. The inspection should be performed at intervals of two months by trained personnel and servicing at half-yearly intervals. Both must always be performed by JUDO customer service or an authorised specialist company, who will if necessary replace defective parts or wear parts. Product standard DIN EN 14897 must be observed and adhered to for the inspection and maintenance procedure. We recommend that you set up a customer service contract, so that your JUDO UV disinfection system can be regularly tested for fault-free operation.

- Make sure the JUDO UV disinfection system is properly sealed and check all electrical functions (control unit and display).
- Check quartz tube and UV sensor for soiling, clean if necessary.
- Check proper functioning of the connecting service and flush valves.

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11.1 Visual inspections

Check the signal lamps (if any) and displays daily. If “ALARM” is illuminated, operation may already be impaired. Check the UV module and/or UV sensor for deposits as soon as possible and clean both if necessary.
In addition to deposits, the radiation strength may also be affected by the age of the lamp or “poor” water quality. Quarterly visual inspections reveal whether cleaning is required. Only with the experience gleaned from these inspections can cleaning intervals based on the actual operating conditions be defined.
Inspect the following components:

- UVC lamp
- Quartz tube
- UV sensor

Document inspection findings in the operations log book.

11.2 Cleaning (normally not required with demineralised water)

The deposition of water constituents results in a layer on the quartz tube that reduces the radiation strength in the water. We recommend that you clean the tube if the UV radiation strength has decreased as a result of the layer formation by ~20% since you last cleaned the tube. However, it must be cleaned immediately if the “LOW UVC %” fault is displayed.

Always remove and clean the quartz tube and UV sensor at the same time using suitable cleaning agents to remove any deposits or dirt.
We recommend the cleaning concentrate specified in Chap. 4.5, especially when removing mineral water constituents (e.g. calcium).
The cleaning agent is normally used as a concentrate. Use at least 20 % of the cleaning agent when using a cleaning solution (diluted with water).

Attention
Observe the safety data sheet of the cleaning agent concentrate.
Protect your eyes, hands and clothes when working with the cleaning agent. Wash off any splashes immediately with water.
Apart from that, the accident prevention regulations are to be observed.
Make sure that the room is well ventilated, do not smoke or use naked flames during the application time of the cleaning agent.

Attention
Never switch on the UV disinfection system with the shut-off valves closed, since this may result in overpressure.

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11.3 Switch off the UVC lamp

The higher the available UV intensity, the more effective the reactor. The longer the lamp has been in use, the lower the UV radiation strength. Due to preset operating parameters, the UV lamp must be replaced if the alarm remains active even after the lamp has been cleaned. This normally happens after 9,000 operating hours, but can be significantly sooner depending on the water quality and operating conditions.
If the desired water quality cannot be achieved with the remaining radiation strength, you may have to replace the lamp sooner. Especially in the case of water with fluctuating UV transmission it is important to ensure that the lamp has a sufficient capacity reserve. However, the increased radiation strength will not help against turbidity. In this case, preliminary filtration must be improved.

Warning
Never switch the UV lamp on outside the reactor.
Prolonged exposure to UV light will cause reddening and/or burning of skin (severe sunburn).
Wear personal protective equipment

Warning
Danger of burns due to hot UVC lamp.
Let the UVC lamp cool off for at least ten minutes before removing it.
Wear personal protective equipment

It is not necessary to stop water flow and drain the radiation chamber to replace the UVC lamp.

- ➔ Pull the plug from the mains supply.
- ➔ Remove the protective conductor from the earth connection of the radiation chamber.
- ➔ Unscrew the cable gland at the protective cover and slide the protective cover along the cable.
- ➔ Carefully pull the connection plug from the UVC lamp.
- ➔ Pull the UVC lamp out of the quartz tube.

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Attention
Hold the new UVC lamp at one end (not the glass body) when removing it from the package.

- ➔ Carefully take the UVC lamp out of the package.
- ➔ Carefully guide the UVC lamp into the quartz tube.
- ➔ Connect the UVC lamp with the connection plug in accordance with the instructions, slide the protective cover towards the radiation chamber as far as it will go and tighten the cable connection.
- ➔ Connect the protective conductor to the earth connection of the radiation chamber in accordance with the instructions.

11.4 Cleaning the quartz tube

Warning
Risk of injury!
Before handling the quartz tube, ensure that the JUDO UV disinfection system is hydraulically depressurised and completely drained!
Wear cut-resistant gloves when installing or removing the quartz!

Warning
Make sure the quartz tube is not scratched. The UV disinfection system must not be operated with a scratched quartz tube. A scratched quartz tube must be replaced immediately.

The quartz tube must be cleaned regularly and whenever maintenance work is carried out or the “Low UVC %” message is displayed.

- ➔ Pull the plug from the mains supply.
- ➔ Remove the protective conductor from the earth connection of the radiation chamber.
- ➔ Unscrew the cable gland at the protective cover and slide the protective cover along the cable.
- ➔ Carefully pull the connection plug from the UVC lamp.
- ➔ Pull the UVC lamp out of the quartz tube and carefully set it down in a dry, grease-free area.
- ➔ Pull the quartz tube carefully, slowly and in a straight line out of the radiation chamber.
- ➔ Make sure the quartz tube is not dirty.

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Only use the cleaning concentrate on the outside of the quartz tube.
In case of minor dirt, use a soft, clean and silicone-free cloth and a bit of methylated spirit or acidic cleaning agent to remove scale and rust (ferrous deposits).
In case of severe dirt, use a more acidic (5%) cleaning agent (e.g. salt, formic acid or any other acidic cleaning agent suitable to remove scale and rust) and rinse thoroughly with water.
Observe the safety instruction of the relevant cleaning agents.
Use alcohol to remove any fingerprints from the quartz tube before installing the UV module.

- ➔ Dry the quartz tube with a clean and silicone-free cloth and then only touch the tube with a clean cloth.
- ➔ To clean the inside of the quartz tube a dry cloth will normally be sufficient.
- ➔ Make sure the inside of the quartz tube is completely dry prior to installation.
- ➔ Carefully guide the clean and dry quartz tube into the opening of the radiation chamber.
- ➔ Carefully insert the clean and dry quartz tube into the radiation chamber and centre it on the spring-loaded guide on the floor of the radiation chamber.
- ➔ Carefully place the O-ring over the quartz tube.
- ➔ Adjust the screw cap on the quartz tube to create a fit close with the protective cap. Tighten the screw cap by hand (↻, approx. 5 Nm) to create a tight connection with the O-ring.
- ➔ Carefully guide the UVC lamp into the quartz tube.
- ➔ Connect the UVC lamp with the connection plug in accordance with the instructions, slide the protective cover towards the radiation chamber as far as it will go and tighten the cable connection.
- ➔ Connect the protective conductor to the earth connection of the radiation chamber in accordance with the instructions.

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11.5 Replace UV sensor

Warning
Risk of injury!
Before handling the UV sensor, ensure that the JUDO UV disinfection system is hydraulically depressurised and completely drained!

- ➔ Unscrew (↺) the connection plug from the UV sensor and remove.
- ➔ Unscrew the UV sensor using the installation tool provided and remove from the radiation chamber.
- ➔ Screw the new UV sensor with the O-ring into the internal thread (¼") on the radiation chamber and tighten by hand (↻, approx. 5 Nm) using the installation tool provided.
- ➔ Re-attach the connection plug to the UV sensor and tighten by hand (↻).
- ➔ Pressurise the radiation chamber and check all connection, the protective cap and quartz tube for tightness.

11.6 Clean the UV sensor

Warning
Risk of injury!
Before handling the UV sensor, ensure that the JUDO UV disinfection system is hydraulically depressurised and completely drained!

The UV sensor must be cleaned regularly (depending on the water quality) and whenever maintenance work is carried out or the "Low UVC %" message is displayed.

- ➔ Unscrew (↺) the connection plug from the UV sensor and remove.
- ➔ Unscrew the UV sensor using the installation tool provided and remove from the radiation chamber.
- ➔ Clean the sensor surface with a clean, soft cloth.
- ➔ Screw the UV sensor with the O-ring into the internal thread (¼") on the radiation chamber and tighten by hand (↻, approx. 5 Nm) using the installation tool provided.
- ➔ Re-attach the connection plug to the UV sensor and tighten by hand (↻).
- ➔ Pressurise the radiation chamber and check all connection, the protective cap and quartz tube for tightness.

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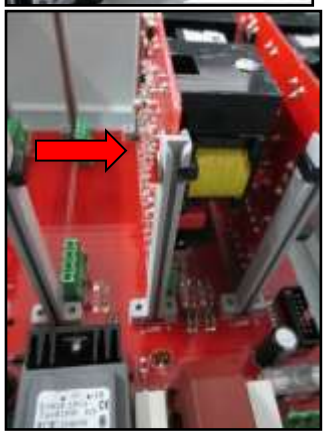
11.7 Replace the ballast

Ballasts are installed into the motherboard in rack configuration. Each ballast starts one lamp.
Ballast from the left starts lamp 1 to lamp 5.
If one lamp is off then first test its ballast with another lamp. If the second lamp doesn't start too then the problem is in the ballast. Check the fuse before replacing the ballast with the following procedure.
If replacement fuse blows then the ballast shall be either repaired or replaced.

Warning
Before starting maintenance operation switch off the panel power supply!

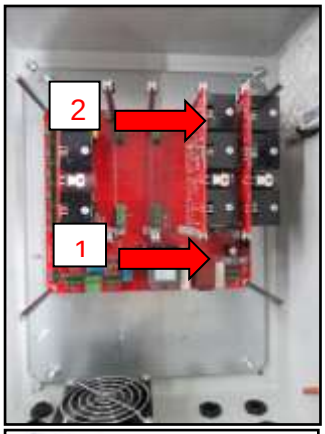
- ➔ Unscrew the protection panel retaining screws.
- ➔ Unlock the ballast from its plastic guides by pressing buttons 1 and 2.
- ➔ Pull out the ballast.
- ➔ Insert the new ballast and lock it pushing button 1 and button 2.
- ➔ Screw the protection panel, close the panel door and start the panel.

Step 1



Zoom on release button

Step 2



Steps 3 and 4

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12 Spare parts

The UCE lamp must be replaced depending on the operating conditions and the quality of the water, but at least once a year.
The O-ring must be replaced as required when the quartz tube is cleaned, but at least once a year.

Designation	Order no.	Pc.
Control unit (JUV 200 GS)	1500624	1
Circuit board (JUV 200 GS)	1500619	1
Backup lamp 80 W * (JUV 50, 110, 200 G/GS)	2350024	1
Quartz tube (JUV 20-200 G/GS)	2350019	1
O-ring 23x4 * (screw cap quartz tube)	1200384	1
UV sensor (JUV 10-200 GS)	2350029	1
Spacer (UVC lamp in Quartz tube)	1880038	1

Tab. 10: Spare parts
* Wear part

12.1 Transfer confirmation and maintenance log

The attached transfer confirmation must be carefully filled out upon commissioning!
The attached maintenance log must be carefully filled out during maintenance work and serves as a template for the creation and orderly keeping of an on-going maintenance book!

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Transfer confirmation

General data:

Building project: _____

Road: _____ No.: _____

Town: _____ Post code: _____

Contact: ☐ Ms ☐ Mr _____

Phone: _____ Mobile: _____

Stand-in: ☐ Ms ☐ Mr _____

Phone: _____ Mobile: _____

JUDO disinfection system:

Order number: _____ Manufacturing number: _____

Model:
☐ JUV 10 G ☐ JUV 10 GS
☐ JUV 20 G ☐ JUV 20 GS
☐ JUV 35 G ☐ JUV 35 GS
☐ JUV 50 G ☐ JUV 50 GS
☐ JUV 60 G ☐ JUV 60 GS
☐ JUV 110 G ☐ JUV 110 GS

Service valve: ☐ JEM ¾" ☐ JEM 1" ☐ JEM 1¼" ☐ JEM 1½"

Flush valve: ☐ JEM-AT ⅜" (time control) ☐ JEM-ATE ⅜" (temperature control)

Local circumstances:

Pipe material: ☐ Stainless steel ☐ Steel ☐ Copper ☐ Galvanized pipe ☐ Plastic

Pressure conditions: Rated pressure: _____ [bar] Flow pressure: _____ [bar]

Raw water values: Conductivity: _____ [µS/cm] Total hardness: _____ [°dH]

Iron content: _____ [mg/l] Manganese content: _____ [mg/l]

pH value: _____ Temperature: _____ [°C]

Remarks and notes:

_____

_____

_____

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_____

Town and date	Signature customer / operator	Signature customer service

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Maintenance log

Note: Observe DIN EN 806-5:2012 and EN 14897!

General data:

Building project: _____

Road: _____ No.: _____

Town: _____ Post code: _____

Contact: ☐ Ms ☐ Mr _____

Phone: _____ Mobile: _____

Stand-in: ☐ Ms ☐ Mr _____

Phone: _____ Mobile: _____

JUDO disinfection system:

Order number: _____ Manufacturing number: _____

Model:
- ☐ JUV 10 G ☐ JUV 10 GS
- ☐ JUV 20 G ☐ JUV 20 GS
- ☐ JUV 35 G ☐ JUV 35 GS
- ☐ JUV 50 G ☐ JUV 50 GS
- ☐ JUV 60 G ☐ JUV 60 GS
- ☐ JUV 110 G ☐ JUV 110 GS

Activities performed:

Ventilation/cleaning: ☐ Radiation chamber ☐ Quartz tube ☐ UV sensor

Checked for leaks: ☐ Radiation chamber ☐ Quartz tube ☐ UV sensor

Function checked: ☐ Control OK ☐ UVC lamp OK ☐ UV sensor OK
☐ Service valve OK ☐ Flush valve OK

Status display: Operating hours: _____ [h] Remaining standby time: _____ [h]
Radiation strength: _____ [%] Temperature display: _____ [°C]

UVC lamp: ☐ UVC lamp replaced ☐ Radiation strength calibrated
☐ Operating hours countdown reset Number of lamp replacements: _____

Local circumstances:

Pressure conditions: Rated pressure: _____ [bar] Flow pressure: _____ [bar]

Raw water values: Conductivity: _____ [µS/cm] Total hardness: _____ [°dH]
Iron content: _____ [mg/l] Manganese content: _____ [mg/l]
pH value: _____ Temperature: _____ [°C]

Remarks and notes: **(e.g. replacement of wear parts, repairs, etc.)**

_____
_____
_____
_____
_____
_____
_____

Town and date	Signature customer / operator	Signature customer service

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13 Notice

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