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Installation and Operation Manual

S-Series™

ATTENTION: Please read this manual carefully and follow the instructions.
Installation shall be carried out only by authorised technicians.

Contents

1. INTRODUCTION

UV disinfection is an efficient, low cost and environmentally friendly process. UV light kills pathogenic micro-organisms quickly without leaving any residues, harmful by-products or affecting the smell or taste of the water.

These units use UV lamps which emit UVC radiation at 254nm which disrupts the DNA in the micro-organisms, so they are either killed or their ability to replicate is destroyed.

The kill rate depends on the UV dose received by the micro-organisms, i.e. the time that a micro-organism is exposed to a certain intensity of UV radiation (Wm2). A UV dose of 400 J/m2, is recognized internationally as a suitable dose to ensure safe disinfection of drinking water.

The disinfection performance of a UV system is determined by the intensity of the UV light, water flow rate, the optical transmission of the water at 254nm and the geometry of the reactor. The sizing of the UV system should be based on these parameters. Please contact your UV-Guard representative if you have any queries regarding correct sizing.

As there are no disinfection substances added to water by UV radiation, there are no residual effects once the water has passed through the UV Reactor.

Only UV-Guard Australia Pty Ltd spare parts should be used to ensure proper operation and performance.

1.1 General Safety Instructions

ELECTRIC SHOCK!

Attention: Dangerous electric voltage is present inside the power supply box and chamber. These instructions must be followed closely to prevent serious personal injuries.

ENSURE EYE PROTECTION IS WORN WHEN SERVICING AND INSTALLING THIS UNIT!

UV-C radiation is harmful to the eyes and skin! UV lamps should be used only when properly installed in the irradiation chamber. The UV lamp must never be operated outside the disinfection chamber.

- Make sure this disinfection unit is only used for the intended purpose as described in the operating instructions.
- This disinfection unit is to be installed properly, according to these operating instructions, before use.
- Do not use a unit with a damaged electrical lead or plug, a unit with any faulty functions, or a unit which has been dropped or has been damaged in some way.

- Make sure that the unit is unplugged when it is not being used, before fitting, or removing any parts, or before cleaning the unit.
- Ensure the disinfection unit is electrically isolated before:
  - Carrying out repairs.
  - Cleaning.
  - Replacement of the UV lamp.
- The unit must be depressurized before maintenance.
- Do not use the UV lamp outside of the UV disinfection reactor.

UV-GUARD UV lamps are designed for permanent operation to reach their best disinfection capacity. Frequent switching on and off reduces the life of the UV lamp!

2. ASSEMBLY AND INSTALLATION

Installation should meet the AS/NZS 3500.1 Plumbing and drainage standards at all times. Installation should be carried out only by qualified technicians.

The Following MUST be Checked Prior to Installation:

- A maximum operating pressure of 1000KPa (10 bar) must not be exceeded.
- The maximum ambient temperature is 45°c.
- The maximum water temperature should be 60°c (maximum recommended flow rates may be reduced for some units, such as UVG S20, S30, S40, S55, S75 S75 and S80 models, at temperatures higher than 25°c).
- The Reactor must be plumbed so it remains full of water at all times while the lamp is operating.
- If the S20, S30, S40 and S55 models are left on during extended periods of no flow, the water in the reactor will begin to get warm. A tap may need to be run for a few seconds until the warm water passes.
- For models above the S55, higher water and UV reactor temperatures will be produced if they are left on during extended periods of no flow. This may damage the UV lamp due to overheating and cause skin burns if the UV reactor is touched. There is also the potential for water burns depending on the vicinity of the system to the water outlet. it is recommended a temperature management valve is installed on the outlet of the reactor of these UV systems. This is to manage the temperature of the UV reactor and water from getting too hot (55 degrees). At 55 degrees the valve will open to purge a small amount of water out of the reactor to either be returned to the source, or dumped to waste. The water flow from this action will cool the reactor and then closes the valve automatically. The warm water is replaced by new cool water. Other, auto- shutdown options are available to protect against overheating.

Recommended systems to use a thermal relief valve are the models above the S55. However, thermal relief valves can also be provided for the S20, S30 and S40 models to prevent warm water reaching the outlet.

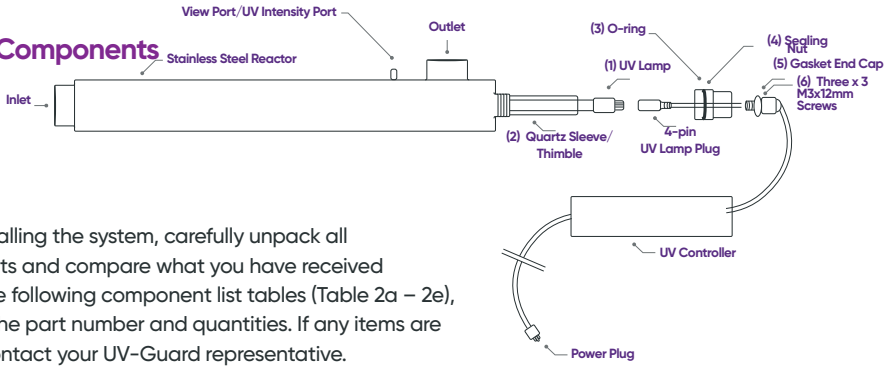
Models

1. The following models are available in the S series. (Table 1)

Model	Inlet/outlet Ø	Min. space to service reactor at power end of chamber mm
S20	½" or ¾"BSP Nipples	300
S30	¾"BSP Nipples	600
S40-62	1" BSP Nipples	1000
S40-76	1½" BSP Nipples	1000
S40X2	2" BSP Nipples	1000
S55	1" BSP Nipples	600
S75	1½" BSP Nipples	1000
S80	2" BSP Nipples	1000
S80-100	2" BSP Nipples	1000
S80X2	2" BSP Nipples	1000
S105	1½" BSP Nipples	1000
S125	2" BSP Nipples	1000
S125-100	2" BSP Nipples	1000
S125X2	2" BSP Nipples	1000
S172	2" BSP Nipples	1000
S172-100	2" BSP Nipples	1000
S172X2	2" BSP Nipples	1000
S160	2" BSP Nipples	1300
S160-100	2" BSP Nipples	1300
S160X2	2" BSP Nipples	1300
S160-100X2	3" BSP Nipples	1300
S245	2" BSP Nipples	1300
S245-100	2" BSP Nipples	1300
S245X2	2" BSP Nipples	1300
S245-100X2	3" BSP Nipples	1300
S440	3" PN16 Flange	1450
S600	3" PN16 Flange	1500

Table 1 – Models

System Components



Before installing the system, carefully unpack all components and compare what you have received against the following component list tables (Table 2a – 2e), checking the part number and quantities. If any items are missing, contact your UV-Guard representative.

Model / Reactor	UV Lamp (1)		Quartz Thimble (2)		Quartz O-Ring (3)		Compression /Teflon Ring		Sealing Nut (4)		End Cap Gasket (5)		End Cap Screws (6)	
	PN	QTY	PN	QTY	PN	QTY	PN	QTY	PN	QTY	PN	QTY	PN	QTY
S20	11020 x 1		20280 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S30	11030 x 1		20290 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S40-62	11040 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S40-76	11040 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S40X2	11040 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S55	11066 x 1		20290 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S75	11074 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S80	11080 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S80-100	11080 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S80X2	11080 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S105	10130 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S125	11125 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S125-100	11125 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S125X2	11125 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S172	11172 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S172-100	11172 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S172X2	11172 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S160	11160 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S160-100	11160 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S160X2	11160 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S160-100X2	11160 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S245	11248 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S245-100	11248 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S245X2	11248 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S245-100X2	11248 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S440	11440 x 1		20360 x 1		31044 x 2		32146 x 1 31062 x 1		32168 x 1		31061 x 1		32105 x 3	
S600	11600 x 1		20370 x 1		31044 x 2		32146 x 1 31062 x 1		32168 x 1		31061 x 1		32105 x 3	

Table 2a – standard model component list

For standard models without UV intensity monitoring, the following additional parts will be provided:

Pyrex View Port Lens		Acrylic View Screw		Viewing Port O-Ring	
PN	QTY	PN	QTY	PN	QTY
32210 x 1		32212 x 1		31040 x 1	

Table 2b – non UV intensity monitoring system components

Where the UV intensity option has been requested, the following additional parts will be provided:

UV intensity sensor (attached to controller)		Sensor Port O-Ring	
PN	QTY	PN	QTY
42022 x 1		31040 x 1	

Table 2c – UV intensity monitoring system components

Where the basic thermal relief option has been requested, the following additional parts will be provided:

Basic Thermal Relief System	PN	QTY
¾" inlet and outlet systems	32255 x 1	
1" inlet and outlet systems	32250 x 1	
1½" inlet and outlet systems	32252 x 1	
2"inlet and outlet systems	32254 x 1	

Table 2d – Basic thermal relief system

Where the industrial thermal relief option has been requested, the following additional parts will be provided:

Temperature Probe Lug		½" Female BSP Brass Solenoid & Coil	
PN	QTY	PN	QTY
41132 x 1		32131 x 1	

Table 2e – Industrial thermal relief system components

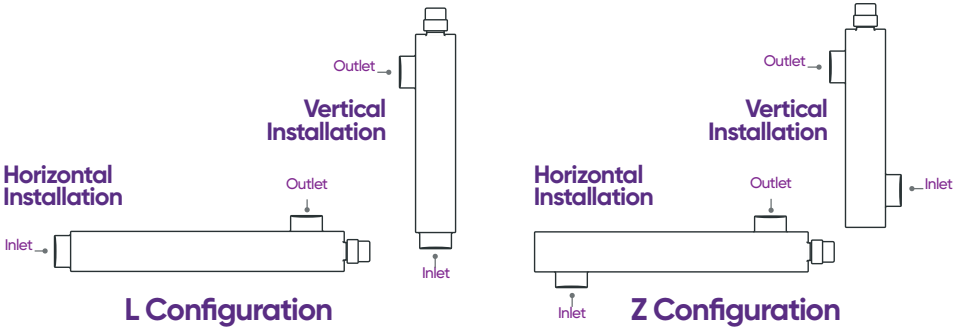
UV-Guard have a selection of different controllers available. The below table shows each controller and their features. Identify which you have purchased and make a note of the part number. This will ensure you are referring to the correct operation section.

Controller	Models Used	Features
Basic indoor controllers 	S20, S30, S40, S40X2 – Controller PN 40044	Indoor use, lamp on/off LEDs, audible lamp fail alarm
	S55, S75, S80, S80-100, S80X2 – Controller PN 40089	
Basic weatherproof controllers 	S20, S30, S40, S40X2 – Controller PN 40051	Weatherproof IP65, lamp on/off LEDs
	S55, S75, S80, S80-100, S80X2 – Controller PN 40091	

Controller	Models Used	Features
Digital indoor controllers 	S20, S30, S40, S40X2 – Controller PN 40050	Indoor use, digital lamp life timer, lamp on/off LEDs, audible lamp fail alarm, volt free alarm contacts
	S55, S75, S80, S80-100, S80X2 – Controller PN 40090	
	S105 – Controller PN 40105	
	S125, S125-100, S125X2, S160, S160-100, S160X2 – Controller PN 40185	
	S172, S172-100, S172X2 – Controller PN 40173	
Digital UVi controllers 	S20, S30, S40, S40X2 – Controller PN 40050-UVi S55, S75, S80, S80-100, S80X2 – Controller PN 40090-UVi	Indoor use, UV intensity monitor, digital lamp life timer, lamp on/off LEDs, audible lamp fail and low UVi alarm, volt free alarm contacts separate 4~20mA UVi signal module available
Weatherproof PLCs 	S20, S30, S40 – Controller PN 50044-N	**Standard** Weatherproof IP65, digital lamp life timer, lamp on/off LEDs, audible lamp, fail alarm, volt free fail alarm **Customised** Lamp safetly interlocking device, remote on/off, SMS fault module, reactor temperature safety system, Modbus module, volt free alarm contacts, personalised software and facia, other features to suit
	S40X2 – Controller PN 50044X2-N	
	S55, S75, S80, S80-100 – Controller PN 50081-N	
	S80X2 – Controller PN 50096-N	
	S125, S125-100, S160, S160-100 – Controller PN 50162-N	
	S125X2, S160X2 – Controller PN 50163-N	
	S172, S172-100 – Controller PN 50172-N	
	S172X2 – Controller PN 50173-N	
	S245, S245-100 – Controller PN 50248-N	
	S245X2 – Controller PN 50249-N	
	S440, S600 – Controller PN 50451-N	

2.1 Installing the Reactor

- Before installation ensure you know which reactor type you are using.
- Make sure that there is enough free space to service the glassware with the reactor (see Table 1). Otherwise it will not be possible to install the UV lamp and maintain the UV system.
- The reactor is to be fixed by means of the mounting legs, either on the wall or on a mounting frame.
- The disinfection chamber comes complete with it's own wall mounting brackets.
- The preferred orientation for the reactor is horizontal, however vertical orientation is acceptable. The outlet ports should be pointing up for horizontal installations, or the outlet should be the top port in vertical installations, to prevent airlocks.



Outlet points should be facing upwards in horizontal installations, or the outlet should be the top port in vertical installations to prevent airlocks.

- Refer to Table 1 for the distance from the sealing nut, required for servicing the unit.
- When mounting the chamber, consideration must be made for the weight of the system due to the stresses associated with pipe work.
- The stainless steel chamber and surrounding pipe-work must be properly earthed to prevent electrolysis/corrosion.

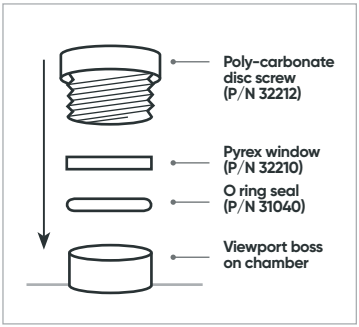
2.2 View port or UV intensity sensor installation

Non UV Intensity Monitoring Systems

If a UV intensity monitor has not been included within your system, the following steps need to be made in order to install the view port assembly.

The view port consists of an O ring seal and a pyrex window, held in place by a clear screw. The pyrex window is inert and in contact with the water, while the clear screw prevents any UV light from escaping.

- Insert the view port O ring into the view port.
- Insert the pyrex window into the view port.
- Secure all components in place by screwing the clear screw firmly into place.

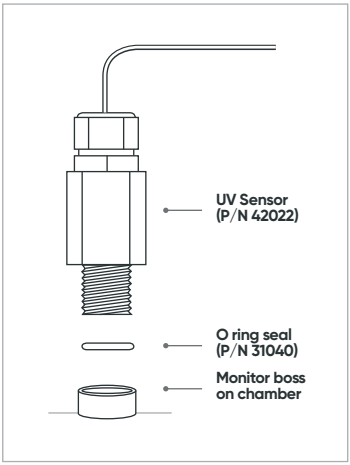


UV Intensity Monitoring Systems

If a UV intensity monitor has been included within your system, the following steps need to be made in order to install the UV intensity sensor.

- The UV sensor is supplied with a 5m cable from the chamber to the power box.
- The UV sensor is installed on the UV disinfection chamber as part of the sensor port assembly. The sensor screws directly into the port and seals against an O ring in the sensor port.
- Do not overtighten, hand tightening is sufficient to compress the O ring and create the seal.

Your UV intensity sensor is now ready for operation. Refer to ***section 3.4 – Servicing and Operation of the PLC Power Supply Boxes*** for details on how UV lamp intensity is calibrated.



2.3 Quartz Thimble and UV Lamp Installation – all models except S440 and S600

DUE TO THE FRAGILE NATURE OF THE QUARTZ, CARE MUST BE TAKEN WHEN HANDLING AND INSTALLING THE QUARTZ THIMBLE and UV LAMP.

Cotton or powder free nitrile gloves should be worn whenever handling the UV lamp or quartz in order to prevent finger print marking, which will detrimentally impact UV intensity.

1. Locate sealing nut and sealing o-ring.

Reactor / chamber

Sealing nut

O-Ring seal

2. Apply a generous amount of food grade O ring lubricant to the O ring. This is provided with all new UV Guard systems. If you are servicing an older system, contact UV Guard for more O ring lubricant as this MUST be applied.

   Insert o-ring inside sealing nut so that it is seated in the designated groove.

O-Ring seated in groove

3. Only handle quartz with clean powder free nitrile gloves, cotton gloves or a rag or tissue.

   Wipe quartz thimble with an alcohol wipe or similar to remove any dirt and finger marks.

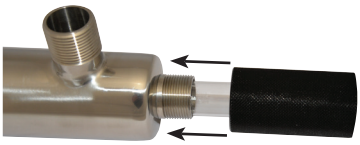
   Do not use thread tape on the sealing nipple.

Sealing Nipple

4. Insert open end of quartz thimble into sealing nut and through o-ring until end of quartz meets internal stop inside sealing nut.

5. Insert domed end of quartz thimble through sealing nipple on UV reactor.

   Slide quartz into UV reactor and it will centre itself in the spring support.



6. Hold sealing nut and screw it onto sealing nipple.

   Continue to screw sealing nut carefully until it begins to compress the o-ring. Turn an additional ½ to ¾ turn so it is firmly hand tight.

   Do not overtighten and do not use mechanical equipment to tighten – hand tight is sufficient.

7. Look through open end of sealing nut and check o-ring is compressed. A torch can be used to assist.

   DO NOT INSTALL UV LAMP YET. The UV reactor quartz thimble O ring seal now need to be checked. Allow water to enter the UV reactor until operating pressure is reached. Leave the UV reactor full of water at operating pressure for a minimum of 15 minutes. Using a torch, inspect the O ring seal and check for water leaks. If a leak occurs, gently tighten the sealing nut until the leak stops.

8. Locate UV lamp and remove it from protective packaging.

   Only handle UV lamp with clean powder free nitrile gloves, cotton gloves or a rag or tissue.

   Wipe UV lamp with an alcohol wipe or similar to remove any dirt and finger marks that can detrimentally impact UV lamp performance.

9. Insert UV lamp into quartz thimble through open end of sealing nut.

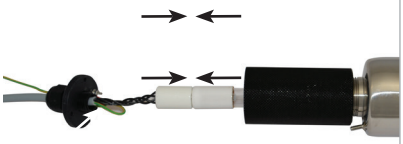
   For vertically installed UV reactors it is important not to drop the UV lamp as this can cause damage.

10. Ensure black gasket is placed over the UV lamp ready for it to be compressed against the sealing nut. (black lamp lead cap models only, not required for clear plastic end cap).

11. Take the UV lamp plug which is connected to the lamp lead and controller.

    Push female 4 pin lamp connector onto UV lamp pins.

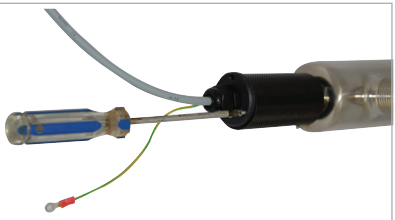
    Do not let go of UV lamp until it is connected to the lamp connector.



12. Line up screw hole positions on end of sealing nut and lamp lead cap.

    Screw M3 screws to secure lamp lead end cap.

    For clear plastic end capped models, gently push the end cap into the end of the sealing nut whilst lining up the three screw holes.



2.4 Earth Wire Connection

For models purchased after March 2019, an earth wire and lug is supplied from the lamp lead. This is to be connected to an earth screw on the UV reactor and secured with the provided nut.

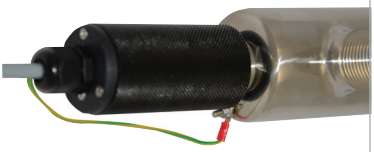
Models purchased prior to March 2019 have an earth connected terminated on the underside of the lamp lead aluminium end cap.

1. Take earth wire lug and place around earth screw on UV reactor.

   Tightened nut to secure earth lug onto earth screw.

   The UV chamber and surrounding pipework must also be earthed to prevent electrolysis/corrosion.

Earth Connection

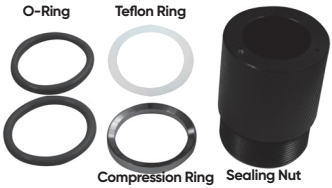


2.5 Quartz Thimble and UV Lamp Installation – S440 and S600 model

DUE TO THE FRAGILE NATURE OF THE QUARTZ, CARE MUST BE TAKEN WHEN HANDLING AND INSTALLING THE QUARTZ THIMBLE and UV LAMP.

Cotton or powder free nitrile gloves should be worn whenever handling the UV lamp or quartz in order to prevent finger print marking, which will detrimentally impact UV intensity.

1. Locate sealing nut sealing, teflon ring, o-ring and compression ring.



2. Locate quartz thimble package and carefully remove from protective plastic sleeve.

   Only handle quartz with clean powder free nitrile gloves, cotton gloves or a rag or tissue.

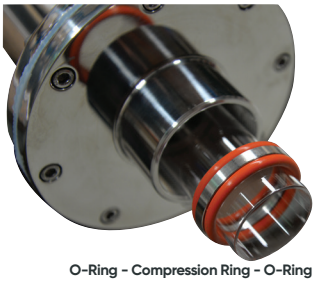
   Wipe quartz thimble with an alcohol wipe or similar to remove any dirt and finger marks.


Quartz Thimble

3. Carefully insert closed end of quartz thimble into UV reactor. Do not insert all the way, there needs to be 100mm of quartz protruding out of UV reactor.

   Apply a generous amount of food grade O ring lubricant to the O rings. This is provided with all new UV Guard systems. If you are servicing an older system, contact UV Guard for more O ring lubricant as this MUST be applied..

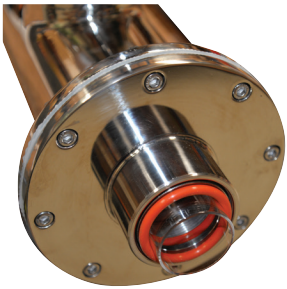
   Place o-ring the compression ring then o-ring around quartz thimble


O-Ring - Compression Ring - O-Ring

4. The domed end of the quartz thimble needs to be inserted into a support plate located at the end of the UV reactor.

   It is advised that a length of pvc is inserted into the quartz thimble. This can then be used to support the quartz whilst it is being located into the spring-loaded cup.

   It is vital that the quartz sits firmly inside the support plate. Once inside, the quartz can be pushed in.



5. Apply a small amount of thread lubricant to the male thread located on the sealing nut.

   Locate the Teflon ring and insert it into the thread end of the sealing nut. Ensure the Teflon ring is resting on the designated lip within the sealing nut. Once the sealing nut is installed, the Teflon ring will compress against the open end of the quartz thimble.

   Begin to screw the sealing nut onto the female sealing nut socket on the UV reactor. Take care not to damage the quartz thimble.

6. Screw on sealing nut until you can feel the compression of the o-ring. Then rotate an extra ¼ - ½ of a turn.

   Do not overtighten and do not use mechanical equipment to tighten – hand tight is sufficient.

7. Look through open end of sealing nut and check o-ring is compressed. A torch can be used to assist.

   DO NOT INSTALL UV LAMP YET. The UV reactor quartz thimble O ring seal/s now need to be checked. Allow water to enter the UV reactor until operating pressure is reached. Leave the UV reactor full of water at operating pressure for a minimum of 15 minutes. Using a torch, inspect the O ring seal/s and check for water leaks. If a leak occurs, gently tighten the sealing nut until the leak stops.

8. Insert UV lamp into quartz thimble through open end of sealing nut.

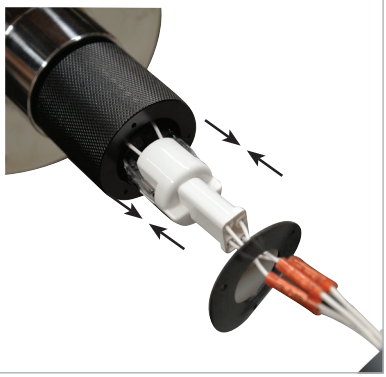
   For vertically installed UV reactors it is important not to drop the UV lamp as this can cause damage.

   Ensure black gasket is placed over the UV lamp ready for it to be compressed against the sealing nut.

9. Take the UV lamp plug which is connected to the lamp lead and controller.

   Push female 4 pin lamp connector onto UV lamp pins.

   Do not let go of UV lamp until it is connected to the lamp connector.



10. Line up screw hole positions on end of sealing nut and lamp lead cap.

    Screw M3 screws to secure lamp lead end cap.

2.6 Earth Wire Connection – S440

Refer to section 2.4

2.7 Power Supply Box

- The power supply box must be mounted clear of the floor as a precaution against the ingress of water.
- The power supply box is not designed for remote mounting. Recommended maximum distance of chamber to power supply box is two (2) metres.
- The power supply box should be mounted so it is not exposed to rain or direct sunlight.
- Return full water pressure to the UV reactor. Insert the power lead into the outlet then turn power on. The UV lamp will ignite and come on, however it will take between 2 and 5 minutes for the lamp to reach full output.
- If a UV intensity monitor is part of your system, refer to ***3.5 – Servicing and Operating the PLC Power Supply Boxes.***
- The provided stainless steel mounting brackets must be used for all weatherproof controllers. If these have not been received, contact your UV-Guard representative. ***Please note that warranty is voided should the weatherproof enclosure be opened.***

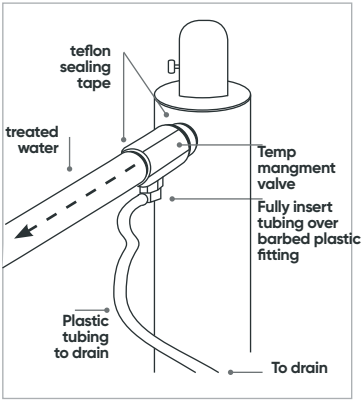
For details of how to operate the digital power supply boxes, including how to calibrate the UV intensity of a new UV lamp see **Section 3 – Servicing.**

2.8 Basic Thermal Relief Valve Installation (Option)

This fully automatic valve is installed on the outlet port of the UV reactor and will discharge a small amount of water to drain or back to a storage tank when the system reaches 55º c. This valve will suit applications where there are extended periods of no flow, to safeguard the UV system from over-heating, ensuring optimum UV output is maintained and preventing UV lamp damage.

- Install the basic thermal relief valve directly onto the outlet port of the UV Reactor using teflon sealing tape to seal the threads. The red barbed plastic fitting must be pointing down **below** the level of the outlet to ensure that air is not trapped in the valve.

- Connect the outlet piping to the output of basic thermal relief valve using teflon sealing tape to seal the threads.
- Connect the clear plastic tubing supplied to the red barbed plastic fitting on the basic thermal relief valve.
- Secure the other end of the plastic tubing to suitable drain or feed back to storage tank.



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2.9 Industrial Thermal Relief System Installation (Option)

The industrial thermal relief system is more sophisticated than the basic version and is only available on weatherproof PLC controllers. There are two types available as follows:

1. Thermal Management System – Solenoid (see all steps)

Water is discharged through solenoid valve should water temperature exceed 55oC. This relies on a pressure pump set-up – when there is a loss in pressure in the system, the pump is activated.

2. Thermal Management System – Shut Down (see steps 1-2)

UV system automatically turned off should water temperature exceed 55oC and goes into alarm. System is automatically turned back on after 4 hours as long as the water temperature is less than 55oC. System can manually be turned back on by operator.

1. Locate temperature probe which will be connected to a lead and plug. Plug probe into designated port on underside of controller (it may already be connected).

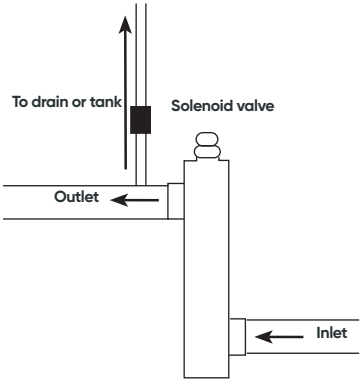
2. Strap temperature probe onto UV Reactor using provided strap.

   It does not matter where along the length of UV Reactor the probe is strapped.

3. Locate ½" female BSP solenoid valve.

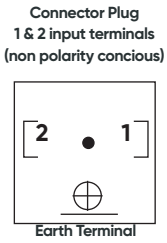
4. A t-section will need to be installed on the outlet side of the UV Reactor.

   The solenoid valve needs to be installed on the t-section so that when it is closed, water flows forward during normal operation. When the solenoid is open, water is able to discharge to drain or back to a storage tank.



5. Locate solenoid plug and lead connected to UV controller.

   Connect onto solenoid plug.



2.10 Building Management System (BMS) Fault Connection (option)

The BMS alarm output option allows system faults to be viewed on BMSs and consists of volt free contact cables connected to the PLC box. Lamp fail and Low UV intensity BMS connections can be provided.

Lamp Fault BMS Connection

This relay will energise when the power is applied and the lamp is operating correctly.

- Identify the BMS cable by checking the labels on the underside of the PLC box.
- Make the required electrical connections based on the following wire details:
  - Black wire = Normally closed
  - Red wire = Common
  - White wire = Normally open

Low UVi BMS Connection

The low UVi relay will be energised when the lamp is on and the intensity drops below the low alarm level.

- Identify the BMS cable by checking the labels on the underside of the PLC box.
- Make the required electrical connections based on the following wire details:
  - Green wire = Normally closed
  - Orange wire = Common
  - Blue wire = Normally open

2.11 SOP – 4-20mA UV intensity output (option)

The 4-20mA output is pre-wired with 2 wires numbered Wire#1 and Wire#2

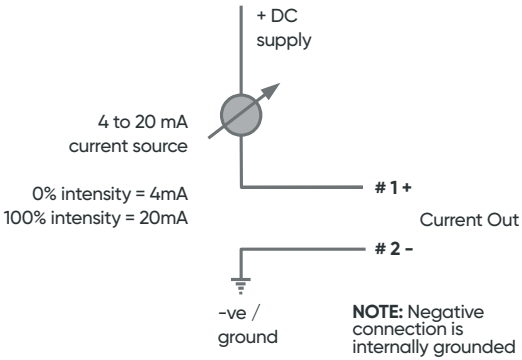
Wire functions are as follows:

- Wire#1 = + current output
- Wire#2 = - current output

This is a current source output, designed to be connected directly to a monitoring device. The output SHOULD NOT be connected to an external power source of any kind, doing so may cause permanent damage.

4-20mA output is referenced to ground,

wire #2 being internally grounded.



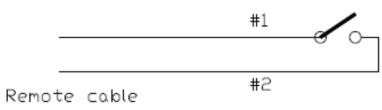
2.12 SOP – Remote on/off input (option)

There are three options available for the Remote on/off input as follows:

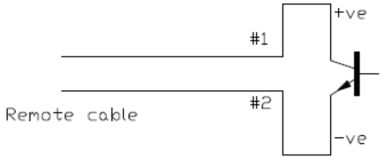
1. Volt free contact
2. 24V AC
3. 24V DC.

Ensure you are aware of which one was provided with your controller and refer to the relevant section below:

VOLT FREE CONTACT

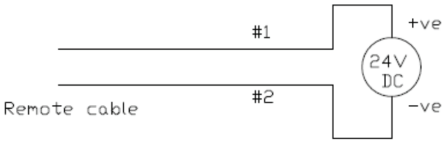


External volt free contact closing circuit between #1 and 2 turns ON the UV System

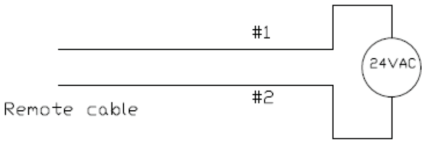


Using electronic switch for remote on/off connect wire #1 to the positive terminal

24V AC or 24V DC

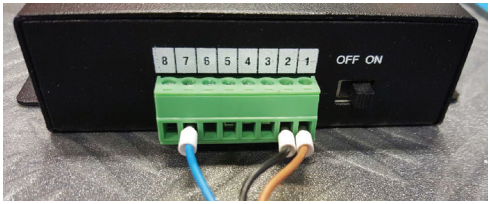


24Volt power supply ON to activate UV System



The user must also notify UV-Guard of the designated mobile phone n
notifications are to be sent to.

- The SMS alarm module must be installed under shelter in an area where there is service provider coverage.
- Identify "SMS Alarm Module" cable emanating from the weatherproof controller.



- The wires within the SMS Alarm Module cable need to be connected to the following points on the SMS Alarm Module:
  - Blue = Port 8
  - Brown = Port 1
  - Black = Port 2

Control unit want you reply sms "999" to synchronize it's clock
Time: 16/07/06 21:55
Power supply: DC
Status: armed

- When the UV system is turned on, the user will receive the following message on their designated mobile phone device:
- The user must then reply to the SMS with "999".
- When synchronisation has been successful, the user will receive the following internal clock message:

Device clock update
Time: 16/07/07 14:49

- The system is now operating correctly, status messages will

Status	SMS
Power interruption when system in operation	"Alarm! UVGuard 50248 Power failure! 16/07/06 21:55"
Power switched on	"UVGuard 50248 Power On 16/07/07 14:49"
Lamp failure	"UV Disinfection SERVICE REQUIRED 16/07/07 14:52"
Normal operation resumed	"UV Disinfection Operation Resumed 16/07/07 14:52"

3. SERVICING AND OPERATING

DUE TO THE FRAGILE NATURE OF THE QUARTZ, CARE MUST BE TAKEN WHEN HANDLING AND INSTALLING THE QUARTZ THIMBLE and UV LAMP.

Cotton or powder free nitrile gloves should be worn whenever handling the UV lamp or quartz in order to prevent finger print marking, which will detrimentally impact UV intensity.

The servicing of this UV reactor should only be carried out by a qualified service technician. Failure to do so will result in the warranty being void.

3.1 Servicing intervals

Refer to the below routine servicing interval table. It is vital that these actions are performed at the designated periods to ensure your UV system is disinfecting sufficiently.

Spare part	Action	Interval
UV lamp	Replaced	12 months or 9,000 hours
Quartz thimble	Cleaned	*12 months - minimum
	Replaced	24 months
Quartz o-ring/s	Replaced	12 months
View port kit	Replaced	24 months
UV sensor o-ring	Replaced	12 months

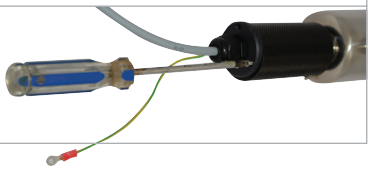
*It is recommended that a required quartz thimble cleaning interval is established as each installation is different, especially when treating rainwater. This is done by checking the condition of the quartz thimble at regular intervals until it is dirty and needs to be cleaned. The time it takes for the quartz thimble to become dirty should then be the cleaning internal in the future.

3.2 Servicing the Quartz Thimble - all models except S440 and S600

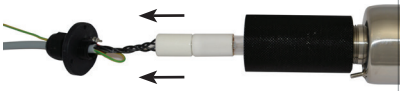
The quartz thimble must be removed and cleaned each time the UV lamp is replaced or in instances where there is low UV intensity (if option provided). It is recommended that the quartz thimble is replaced every two years. If the quartz is fouled to the point that it cannot be cleaned, it must be replaced. The quartz plays an integral role in the UV lamps ability to transmit UV light through the water.

1. Turn UV system off, hydraulically isolate UV reactor and drain UV reactor prior to servicing.

2. Remove the three screws that secure the end cap to the sealing nut.



3. Slide UV lamp out and disconnect from 4 pin plug.

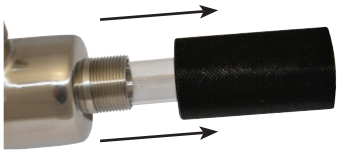


4. Remove UV lamp from UV reactor and place in safe place. Or, if replacing UV lamp, dispose of it according to local government regulations.

5. Unscrew sealing nut anti-clockwise and carefully remove quartz thimble from UV reactor.

   As sealing nut thread disengages, be careful as UV reactor internal quartz support spring may force quartz out.

   Remove sealing nut from quartz thimble and put it in a safe place.



6. If quartz thimble is less than two years old, wipe it down with cleansing cream or similar and rinse with water.

   An alcohol wipe should be used as a final clean.

   The quartz must be perfectly clean. If the quartz is unable to be cleaned, it must be replaced.

7. Reassemble and insert cleaned quartz thimble as per **section 2.3.**

8. If quartz thimble is two years old or unable to be cleaned, replace it as per **section 2.3.**

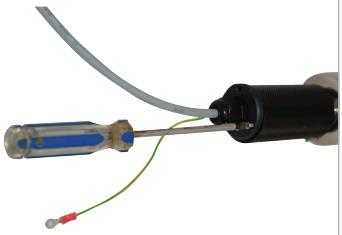
3.3 Servicing the UV Lamp - all models except S440 and S600

1. Switch off mains power to UV system

2. Remove the three screws that secure the end cap to the sealing nut.

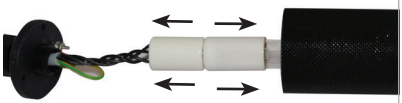
   Unscrew earth lug from UV reactor.

   The UV lamp will be attached to the lead that goes through the end cap.



3. Slide UV lamp out so that to allow you to get a firm hold on the ceramic end.

   Remove 4 pin plug from UV lamp.



4. Remove UV lamp and dispose of it according to local government regulations.

5. Locate UV lamp and remove it from protective packaging.

   Only handle UV lamp with clean powder free nitrile gloves, cotton gloves or a rag or tissue.

   Wipe UV lamp with an alcohol wipe or similar to remove any dirt and finger marks that can detrimentally impact UV lamp performance.

6. Install new UV lamp following instructions listed in **section 2.3.**

7. If your controller has a lamp life timer or UV intensity monitor (40050, 40090, 40105, 40185, 40173, 40050UVi, 40090UVi, All Weatherproof PLCs), go to the relevant **section 3.4, 3.5 or 3.6.** The lamp life timer will need to be re-set whilst UV intensity monitored units will need to be calibrated.

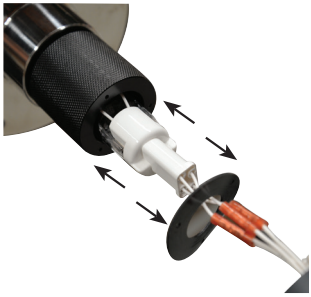
3.4 Servicing the Quartz Thimble - S440 and S600

The quartz thimble must be removed and cleaned each time the UV lamp is replaced or in instances where there is low UV intensity (if option provided). It is recommended that the quartz thimble is replaced every two years. If the quartz is fouled to the point that it cannot be cleaned, it must be replaced. The quartz plays an integral role in the UV lamps ability to transmit UV light through the water.

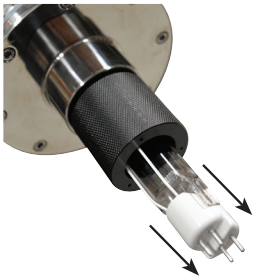
1. Turn UV system off, hydraulically isolate UV reactor and drain UV reactor prior to servicing.

2. Remove the three screws that secure the end cap to the sealing nut.

3. Slide UV lamp out and disconnect from 4 pin plug.



4. Remove UV lamp from UV reactor and place in safe place. Or, if replacing UV lamp, dispose of it according to local government regulations.



5. Unscrew sealing nut anti-clockwise and carefully remove quartz thimble from UV reactor.

   As sealing nut thread disengages, be careful as UV reactor internal quartz support spring may force quartz out.

   Remove sealing nut from quartz thimble and put it in a safe place.

   Inspect Teflon ring located inside sealing nut. If it is brittle or damaged, replace it.

6. If quartz thimble is less than two years old, wipe it down with cleansing cream or similar and rinse with water.

   An alcohol wipe should be used as a final clean.

   The quartz must be perfectly clean. If the quartz is unable to be cleaned, it must be replaced.

7. Reassemble and insert cleaned quartz thimble as per **section 2.5.**

8. If quartz thimble is two years old or unable to be cleaned, replace it as per **section 2.5.**

3.5 Servicing the UV Lamp - S440 and S600

1. Switch off mains power to UV system

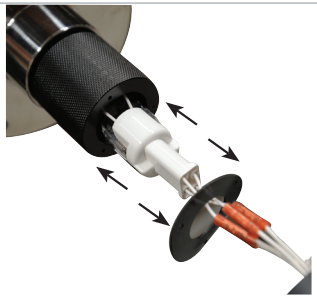
2. Remove the three screws that secure the end cap to the sealing nut.

   Unscrew earth lug from UV reactor.

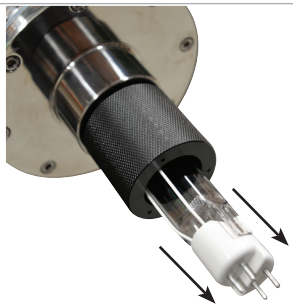
   The UV lamp will be attached to the lead that goes through the end cap.

3. Slide UV lamp out so that to allow you to get a firm hold on the ceramic end.

   Remove 4 pin plug from UV lamp.



4. Remove UV lamp and dispose of it according to local government regulations.



5. Locate UV lamp and remove it from protective packaging.

   Only handle UV lamp with clean powder free nitrile gloves, cotton gloves or a rag or tissue.

   Wipe UV lamp with an alcohol wipe or similar to remove any dirt and finger marks that can detrimentally impact UV lamp performance.

6. Install new UV lamp following instructions listed in **section 2.5.**

7. You will now need to reset the lamp timer in you Weatherproof PLC. Additionally, if you have UV intensity monitoring functionality, your UV intensity sensor will need to be calibrated. Go to **section 3.6.**

3.6 Servicing the UV Sensor

	Item	Part Number
a.	UV sensor (Weatherproof PLC)	42022
b.	UV sensor (Digital Indoor UVi controller)	42023
c.	O ring for UV sensor	31040

The UV sensor window should be cleaned every time the quartz thimble is cleaned or replaced.

To clean the sensor window and replace the corresponding O ring, the UV sensor needs to be removed from the chamber. To do this the unit much be switched off and the chamber hydraulically isolated and depressurised.

- Unscrew the UV sensor from the chamber (it may be useful to remove the sensor cable from the terminals inside the electrical enclosure so the cable does not get twisted).
- Carefully remove the sensor and O ring seal from the chamber.
- Replace the O ring seal.
- Clean or replace the sensor window.
- Screw the UV sensor slowly and carefully so the sensor pushes against the window and compresses the O ring seal.

3.7 Servicing and Operating UV Controllers

3.7.1 40044 and 40089 Controllers

The 40044 and 40089 controllers are for indoor use only (require shelter). They have lamp on/off LEDs and a lamp fail audible alarm.

Under normal operation, the green LED will be on.

When there is a fault with the UV lamp the red LED will be on and the controller will sound an alarm. If no LEDs are on but there is power to the controller, the controller may be faulty and will need to be replaced.

3.7.2 40051 and 40091 Controllers

The 40051 and 40091 controllers are designed to be installed in the weather but away from direct sunlight. They have lamp on/off LEDs.

Under normal operation, the green LED will be on. When there is a fault with the UV lamp or controller the red LED will be on.

If no LEDs are on but there is power to the controller, the controller may be faulty and will need to be replaced.

3.7.3 40050, 40090, 40105, 40185 and 40173 Controllers

1. Normal Operation:-

When the 40050 or the 40090 power supplies are properly installed, connected to a UV lamp ,switched on and operating normally, the red digital screen will initially display '365' indicating 365 days of rated lamp life remaining. The green LED will also be illuminated indicating the UV lamp is operating. The red digital display will decrease each day until the screen reaches '0' and the end of lamp life alarm is activated.

2. Display Options:-

There is a single "S" button operation for viewing options and re-setting the unit. Under normal operating conditions the screen can display lamp life left in days (365 → 0 days) or ballast operating time in days (0 → 9999 days). The default display is the remaining lamp life in days (365 → 0 days). To view ballast operating time, press the "S" button for less than 2 seconds. The LED display will show ballast operating time (0 → 9999 days) for 10 seconds then return to displaying the remaining lamp life (365 → 0 days). Pressing the "S" button while the ballast operating time is displayed will return the display immediately to the remaining lamp life before reaching the end of 10 seconds.

3. Lamp Failure:-

If the UV lamp fails the buzzer will sound on and off at 1 second intervals, the red LED will be illuminated and the remaining lamp life will stop counting down. These features will remain until the lamp is replaced and the ballast re-set. The ballast operating days will continue to count up while there is power to the ballast.

4. End Of Lamp Life Alarm:-

When lamp life reaches 0 the display will show "A3", the red LED will flash and the buzzer will sound on for 1 second and off for 5 seconds.

5. Deferring End Of Lamp Life Alarm:-

The end of lamp life alarm can be deferred four times for a period of 7 days, to allow time to order and replace the old lamp with a new lamp. To defer the alarm, press and hold the "S" button for 5 seconds until the screen displays "dELy" then release the button and the lamp life will be re-set to 7 days and there will be no audible alarm but the Red Light will be flashing and the "A3" will be displayed. The ballast will count down from 7 to 0 days and the alarm buzzer will start again. This deferring of the end of lamp life alarm can be done 4 times. After the fourth time the buzzer cannot be stopped until the lamp is replaced and the lamp life re-set.

6. Lamp Life Re-setting:-

When a new lamp is installed in the UV unit the ballast should be re-set to indicate 365 days lamp life remaining. To do this the "S" button should be pressed and held for 10 seconds, when the display will show "rSEt". Keep pressing for at least another 4 seconds after the LED digits go to 365 and the buzzer sounds once, then release the "S" button and the ballast will be re-set and operating normally. So in total the "S" button needs to be held down for at least 14 seconds to re-set the lamp life.

7. Ballast Failure:-

If there is power to the ballast but there is no digital display and neither of the LEDs are illuminated then the ballast has failed and needs to be replaced.

3.7.4 40050UVi and 40090UVi Controllers

The 40050UVi and 40090UVi controllers are for indoor use only (require shelter). They have an inbuilt UV intensity monitor and are provided with a UV intensity sensor. Other features include temperature measurement and volt free alarm contacts.

Mount the controller horizontally and install the UV intensity sensor into the UV reactor. Ensure that the lamp is connected and is within UV reactor and turn the controller on.

START-UP DIAGNOSTICS

- Check if the lamp is OK. The LCD displays ' Lamp Fault ' if the lamp states fault, there could be no connection or there is a faulty lamp.

AV: 05.0mW/cm²
RV: 25.0%
AT: 0000 hours
T: +25°C, Lamp Fault

- Check if the lamp is OK. The LCD display ' Lamp ON' if the lamp is Normal.

AV: 05.0mW/cm²
RV: 25.0%
AT: 0000 hours
T: +25°C, Lamp ON

- Check if the Sensor is OK. The LCD displays ' Sensor Fault ' if the Sensor is faulty or no Sensor (no connection)

AV: Sensor Fault
RV: Sensor Fault
AT: 0000 hours
T: +25°C, Lamp ON

- Check if the Sensor is OK. The LCD will display Current UV intensity value if the Sensor is Normal.

AV: 05.0mW/cm²
RV: 25.0%
AT: 0000 hours
T: +25°C, Lamp ON

- The UV-Guard UV sensor detects the discrete 254nm wave length of the UV lamp. This information is relayed to the UV controller and is displayed in "% UV Output" and the absolute value mW/cm^2 .

- Measuring Range: 0~20mW/cm^2. The default relative value %
  00.0 mW/cm^2 ---> 0% 20.0mW/cm^2 ---> 100%

- Measuring Range: 0~20mW/cm^2. The default relative value %
  00.0 mW/cm^2 ---> 0% 20.0mW/cm^2 ---> 100%

- Setting the current UV intensity Value to 100%, Press the buttom more than 5 seconds for the default value to reset.

  01: Set the relative value of UV intensity to 100%
  02: Set the lamp life 9000 hours

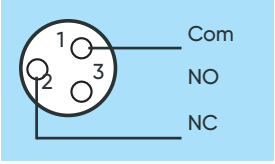
AV:	05.0mW/cm^2
RV:	100.%
AT:	0000 hours
T:	+25°C, Lamp ON

- Led status : UV intensity status indication via LED indicators and fault contact
  green led: >70%; yellow led: 50~70%; red led: <50%

- Working in conjunction with the UV intensity monitor, the UV controller has a set of dry contacts. When the UV intensity monitor senses that the water is not adequately being treated and drops to 50% UV Intensity, the dry contact relay is activated. These contacts can be wired for a normally open (NO) or normally closed (NC) operation. These dry contacts will remain either closed (NC) or open (NO), until the UV level rises above 50%.

  The dry contacts are typically used to operate a solenoid valve, but can also be used to operate a horn, buzzer, or remote light. It should be noted that these are switches only; no power is supplied by these contacts. Any remote piece of equipment hooked up to the dry contacts must obtain their power from another source.

  The relay contacts are rated for 0.5A and 250VAC to allow for a wide range of applications.



- Lamp is ON and UV intensity value is 50~100%. The 3 free contact is normal.

- The 3 free contact will be moved when the UV intensity value is less than 50%.
  >Lamp is OFF (Lamp failure)
  >Lamp is ON but intensity is LOW,(less than 50%)
  >Lamp is ON but the intensity sensor is unplugged
  >Power to the ballast is OFF (ie ballast and lamp OFF)

- The LCD display 'Change Lamp' when the timer increase 9000 hours.

AV: 02.5mW/cm^2
RV: 50.%
AT: Change Lamp
T: +25°C, Lamp ON

- The UV sensor is an extremely sensitive and fragile instrument. Extreme care is required when handling and cleaning. The sensor window itself is constructed from quartz which is extremely fragile, be careful you do not chip or break this quartz window. Manufacturer's warranty does not cover damage due to neglect or misuse.

Troubleshooting

- Change lamp ----> replace lamp with manufacturers replacement
- Sensor fault -----> ensure UV sensor cable is properly connected to UV compact replace UV sensor
- Lamp fault ----> ensure that the UV lamp is properly engaged to the lamp connector lamp connector contacts are corroded old lamp, replace lamp.
- UV intensity value is less than 50%, red led light ----> clean quartz sleeve, check UVT (water quality) replace UV lamp.

3.7.5 UVG Weatherproof Controllers

The UVG Weatherproof PLC display provides the user with a series of screens which provide information on the status of the UV unit as well as fault warnings and actions.

3.7.5.1 - System Start Up

When the power is first switched on, the HOME screen will be displayed. The HOME screen shows the lamp life count down timer and UVi % value (if the UV intensity monitoring option has been provided. The UVi monitoring system needs to be calibrated as described in ***section 3.6.5.2***).

3.7.5.2 – UV Intensity Calibration/Lamp Timers Reset

If your weatherproof PLC has been supplied with a UV intensity monitoring option, the UV intensity sensor needs to be calibrated against the new UV lamp. The water to be treated MUST be flowing through the UV system during the calibration process. In doing so, the lamp timers will be reset. Follow the following steps.

- Allow water to be treated to flow through the UV system.
- When the lamp has been fitted and sealing nut cap mounted, **turn on power** to the UV unit.
- As soon as the controller displays the HOME screen showing the count down timer, **press Mode**. This will access the SERVICE menu. Please note, if the UV system is already in alarm, the Enter button will need to be pressed prior to the Mode button being pressed to access the SERVICE menu.
- **Press Down** until "New Lamp Fitted" is displayed. If you pass this option, **press Up** until it can be seen again.
- **Press Enter** to initialize UVi calibration. The display will now flash for 20 minutes. Once completed, the screen UVi will display 100% and the lamp timers will be reset. If the UV system does not have a UVi monitoring option, the above steps need to be completed to reset the lamp timers when a new lamp has been fitted.

3.7.5.3 – UV Intensity Calibration Without Resetting Lamp Timers

In some instances (replacement of a UVi sensor), it is required to re-calibrate the UV lamp without resetting the lamp timers. Following the below steps:

- As soon as the controller displays the HOME screen showing the count down timer, **press Mode**. This will access the SERVICE menu. Please note, if the UV system is already in alarm, the Enter button will need to be pressed prior to the Mode button being pressed to access the SERVICE menu.
- **Press Down** until "Re-cal UVi" is displayed. If you pass this option, **press Up** until it can be seen again.
- **Press Enter** to initialize UVi calibration. The display will now flash for 20 minutes. Once completed, the screen UVi will display 100%.

Please note, *water to be disinfected must be flowing through the UV system during the calibration process. Using a different water source, or calibrating when there is no flow will result in an unrealistic UVi value being displayed.*

3.7.4.4 – Status Screens

During the operation of the system, a number of parameters are logged. These logs can be seen in the STATUS screens, which can be accessed by the below steps:

- From HOME screen, **press Mode**.
- **Press Up or Down** to scroll through the STATUS screens. These are summarised in the following table.

STATUS Screen	Description
Lamp Operating	Total number of hours the current lamp has been operating for.
Lamp Errors	Total count of faults recorded by the unit across all lamp replacements.
Lamp Replaced	Number of times a UV lamp has been replaced.
Total On Time	Total operating time of UV unit across all lamp replacements.
Lamp Restarts	Total number of lamp restarts for the current lamp.

3.7.5.5 – System Faults/Alerts and Troubleshooting

When the system encounters a fault it will sound an audible alarm and the "Lamp Fail" LED will flash. The below table shows the FAULT screens and how they should be managed.

FAULT/ALERT Screen	Description/Action
Near end of life	Total number of hours the current lamp has been operating for.
Mute the Alarm?	Alarm initiated when UV lamp is nearing its end of life. **Press ENTER** and the alarm will be muted for 24 hours. Make arrangements to install a new UV lamp to ensure sufficient disinfection. Contact your UV-Guard distributor.
End of life	Number of times a UV lamp has been replaced.
Mute the Alarm?	Alarm initiated when UV lamp has reached its end of life. **Press ENTER** and the alarm will be muted for 24 hours. Make arrangements to install a new UV lamp to ensure sufficient disinfection. Contact your UV-Guard distributor.
Low UVi	Total number of lamp restarts for the current lamp.
Mute the Alarm?	Alarm initiated when UVi is less than 60% (or a different pre-defined value). **Press ENTER** and the alarm will be muted for 24 hours. Check and clean quartz sleeve and UVi lens. Check UV lamp life and if there is a water deterioration problem. If low UVi problems persist, contact your UV-Guard distributor.
UV System is OFF	Initiated if there is a remote enable option with setting to remotely turn off the system.
SAFETY INTERLOCK	If the system has a lamp safety interlock system, this will be displayed in the event of lamp interlock initialisation.
OVER TEMPERATURE	If the system has the thermal management option with auto shut-down, this message will be shown when the system has been turned off due to over temperature. Ensure there is flow in the system. If there is and the system is still shutting down, contact your UV-Guard distributor.
Service Required	Alarm initiated when lamps or ballast has stopped working. Contact your UV-Guard distributor.

4. SPARE PARTS LIST WITH CORRESPONDING PART NUMBERS

Model / Reactor	UV Lamp (1)		Quartz Thimble (2)		Quartz O-Ring (3)		Compression /Teflon Ring		Sealing Nut (4)		End Cap Gasket (5)		End Cap Screws (6)	
	PN	QTY	PN	QTY	PN	QTY	PN	QTY	PN	QTY	PN	QTY	PN	QTY
S20	11020 x 1		20280 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S30	11030 x 1		20290 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S40-62	11040 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S40-76	11040 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S40X2	11040 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S55	11066 x 1		20290 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S75	11074 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S80	11080 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S80-100	11080 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S80X2	11080 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S105	10130 x 1		20310 x 1		31000 x 1		-		32100 x 1		-		32105 x 3	
S125	11125 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S125-100	11125 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S125X2	11125 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S172	11172 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S172-100	11172 x 1		20140 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S172X2	11172 x 2		20140 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S160	11160 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S160-100	11160 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S160X2	11160 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S160-100X2	11160 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S245	11248 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S245-100	11248 x 1		20200 x 1		31010 x 1		-		32110 x 1		-		32105 x 3	
S245X2	11248 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S245-100X2	11248 x 2		20200 x 2		31010 x 2		-		32110 x 2		-		32105 x 6	
S440	11440 x 1		20360 x 1		31044 x 2		32146 x 1 31062 x 1		32168 x 1		31061 x 1		32105 x 3	
S600	11600 x 1		20370 x 1		31044 x 2		32146 x 1 31062 x 1		32168 x 1		31061 x 1		32105 x 3	

For standard models without UV intensity monitoring, the following additional parts will be provided:

Pyrex View Port Lens		Acrylic View Screw		Viewing Port O-Ring	
PN	QTY	PN	QTY	PN	QTY
32210 x 1		32212 x 1		31040 x 1	

Where the UV intensity option has been requested, the following additional parts will be provided:

UV intensity sensor (attached to controller)		Sensor Port O-Ring	
PN	QTY	PN	QTY
42022 x 1		31040 x 1	

Where the basic thermal relief option has been requested, the following additional parts will be provided:

Basic Thermal Relief System	PN	QTY
¾" inlet and outlet systems	32255 x 1	
1" inlet and outlet systems	32250 x 1	
1½" inlet and outlet systems	32252 x 1	
2"inlet and outlet systems	32254 x 1	

Where the industrial thermal relief option has been requested, the following additional parts will be provided:

Temperature Probe Lug		½" Female BSP Brass Solenoid & Coil	
PN	QTY	PN	QTY
41132 x 1		32131 x 1	

Warranty Information

UV GUARD'S PRODUCTS AND THE AUSTRALIAN CONSUMER LAW

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. The benefits provided to you by this warranty are in addition to other rights and remedies available to you under the law.

TWO YEAR GUARANTEE FOR THE REACTOR

UV Guard will grant a two (2) year guarantee from the date of purchase for this Stainless Steel Reactor. Faults regarding the material and workmanship of this reactor will be rectified free of charge within the warranty period. The warranty does not cover instances where the system is subjected to corrosive chemicals or materials. This warranty does not cover installations where salt water or water with chloride levels greater than 250ppm and greater than 25°C passes through the reactor. This warranty does not cover damage to threads as a result of mishandling.

ONE YEAR GUARANTEE FOR POWER SUPPLY, QUARTZ THIMBLE/ SLEEVE, AND UV CONTROLLERS

UV Guard will grant a one (1) year guarantee from the date of purchase for the Power Supply, Quartz Thimble/Sleeve, and UV Controllers.

ONE YEAR GUARANTEE FOR ULTRAVIOLET LAMP(S)

UV Guard will grant a one (1) year guarantee from the date of purchase, if the UV lamp fails due to faults regarding material and workmanship. This warranty will be voided if the unit is switched on and off more than four times in a 24 hour period.

PLEASE NOTE: As soon as you detect a defect or fault, you are to immediately cease using the product and lodge a warranty claim with details of the defect to UV Guard by email to the email address stated below. Once UV Guard has assessed your claim and confirmed that the warranty applies, UV Guard will determine whether it will replace the product, repair the product, or reimburse you the amount to replace or repair the product. You must return any faulty products to UV Guard's Head Office at your own cost, unless otherwise agreed by UV Guard. All warranties provided by UV Guard will be invalidated by, and UV Guard will not be responsible to any damage or defect to the products caused in connection with: your failure to install, handle, use, maintain, operate, service, and replace the products in accordance with the relevant instructions and directions contained in this Manual, UV Guard's Terms and Conditions, any applicable law, the direction of any applicable authority (as defined in UV Guard's Terms and Conditions), or otherwise with UV Guard's instructions; the opening or breaking of the manufacturers seal, the electrical equipment (which is designed and manufactured to the specifications of the order), or any additional changes not approved by UV Guard; and the installation and/or commissioning of the products by any individual not authorised by UV Guard.

uv guard™
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