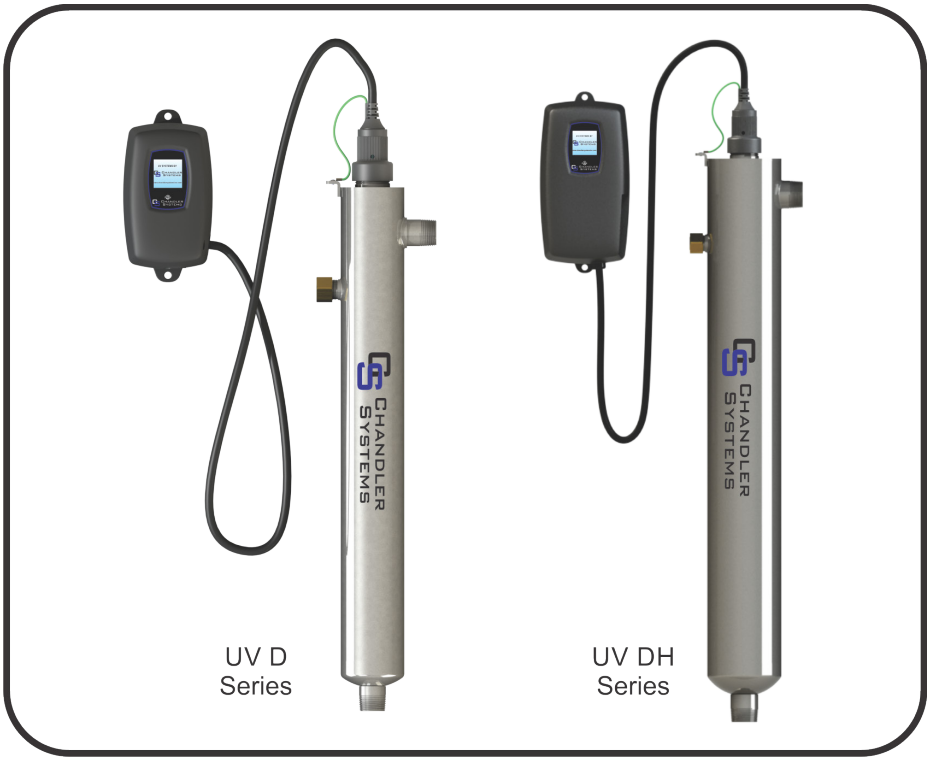
CHANDLER SYSTEMS

OWNERS MANUAL

Operation & Installation Instructions



www.chandlersystemsinc.com

Congratulations on purchasing this ultraviolet disinfection system. By purchasing a CHANDLER UV Disinfection system you are receiving not only a high quality product but also peace of mind. Protecting your water supply with a UV system gives you reassurance that your family will have access to safe drinking water throughout your entire home with no chance of microbiological contamination. This is a chemical free process which is simple in its concept and effective in its ability to inactivate microorganisms present in the water supply. Simple maintenance, continuous disinfection and ultimately safe water, CHANDLER makes it that easy.

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Safety Considerations

Although your UV system has been manufactured to the highest safety standards, care must be followed when operating and/or maintaining your system.

1. Before servicing this equipment, disconnect the power cord from the electrical outlet.

2. **Energy given off by the UV lamp can be harmful to your eyes and skin**. NEVER look directly at an illuminated UV lamp without adequate eye protection and always protect your skin from direct exposure to the UV light.

3. For complete disinfection, use ONLY genuine replacement parts.

4. Do not operate the unit if it has any damaged or missing components.

5. To avoid possible electrical shock, use only with a properly grounded electrical outlet.

6. Never perform any maintenance to the system unless you are comfortable in doing so. Contact the manufacturer for service instructions if required.

7. Do not use this system for any purpose other than what it was intended for. Misuse of this system could potentially cause harm to the user or others.

8. Your system is intended to be installed indoors and away from leaking plumbing. DO NOT plug the unit in if the system or any of the components are wet.

9. The disinfection system should be directly installed into a ground fault circuit interrupter (GFCI). If the use of an extension cord is required, the cord must be manufactured with a minimum of 16 gauge wire and care should be taken to avoid potential tripping hazards.

10. We recommend that a licensed plumber or certified technician install the system.

Before You Begin

The following will be needed for installing the UV system:

Tools

- Pipe cutter, hacksaw or other specialised tools required to cut into your existing plumbing
- Soldering tools (torch, flux, emery cloth and solder)
- Wrench (for tightening fittings)

Other Materials

- Inlet/outlet connections
- Teflon™ tape

Water Quality Parameters

UV disinfection is extremely effective against microorganisms but only if the UV light can pass through the water it needs to treat. This means that the quality of your water is very important in order to ensure complete disinfection.

Treated water should be tested for at the least the parameters listed below. If the water exceeds the listed parameters CHANDLER strongly recommends that appropriate pretreatment equipment be installed (equipment required will depend on parameters being treated):

Hardness:	<7 gpg (120 mg/L) – if hardness level is 7 gpg or slightly below the quartz sleeve must be cleaned periodically in order to ensure efficient UV penetration; if above the water should be softened.
Iron (Fe):	<0.3 ppm (0.3 mg/L)
Manganese (Mn):	<0.05 ppm (0.05 mg/L)
Turbidity:	< 1 NTU
Tannins (organics):	<0.1 ppm (0.1 mg/L)
UVT (transmittance):	>85% (Please contact CHANDLER if water has a UVT that is less than 80% for pre-treatment recommendations)

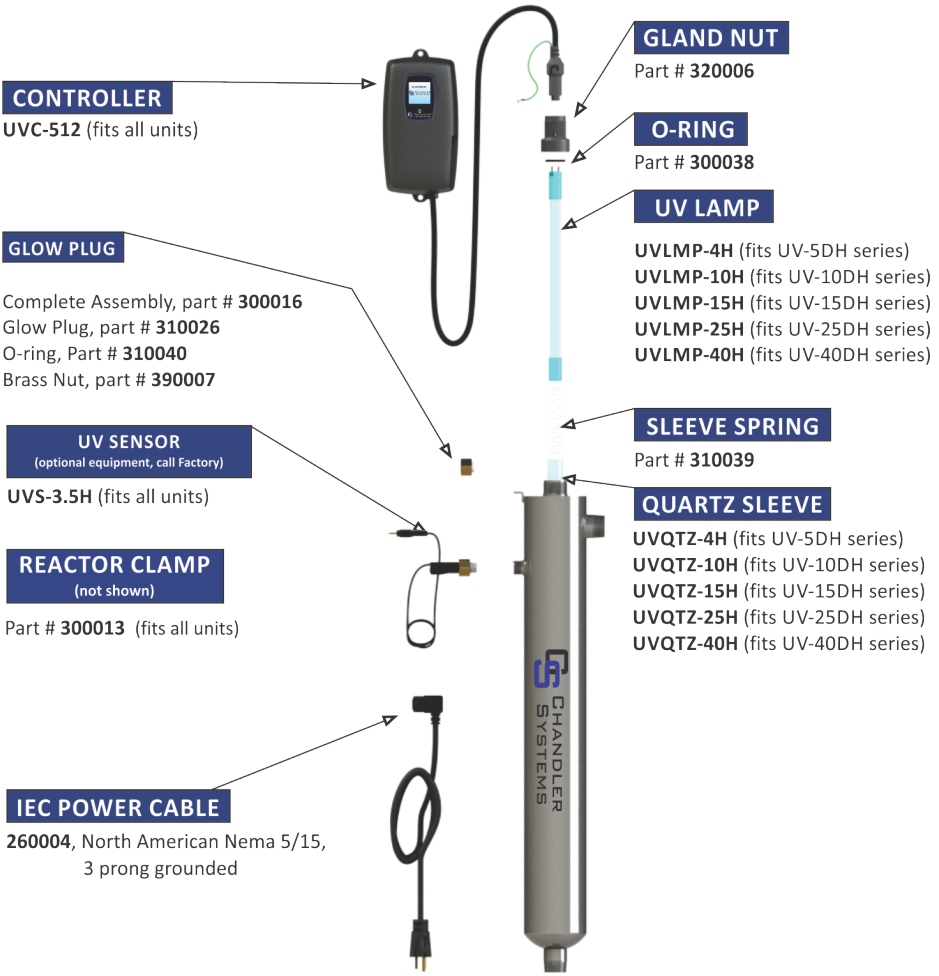
You can have your water tested at a private analytical laboratory or by your local dealer. It is always recommended to install pre-filtration of at least 5 microns prior to a CHANDLER disinfection system.

Assembly

Unpack the system and ensure all the components are included with the system. Your system is shipped with the following components:

"UV/UV D" Series (Standard output lamp systems)

“UV DH” Series (High output lamp systems)



System Sizing

All CHANDLER systems are rated for a specific flow rate in water that meets the quality parameters on page 5. **PLEASE NOTE** that increasing the flow above this rating or disinfecting water that does not meet the quality paramaters will decrease the dose and therefore compromise the microorganism inactivation. To determine the flow rate, follow these simple steps:

1.Be sure no water is being used in the home.

2.Open a faucet or tap nearest the pressure system and run until the well pump starts.

3.Close the faucet and using a second hand watch, record the length of time in seconds until the pump stops. This is known as the cycle time.

4.Then using a container of known volume, preferably in US Gallons, open the faucet or tap nearest the pressure system and measure the amount of water drawn off until the pump starts again. Depending on the size of the container used, it is acceptable to turn the faucet on and off to empty the container. This measurement is known as the draw down.

To calculate the pressure system flow rate divide the draw down by the cycle time and multiply that by 60.

Draw Down_____÷ Cycle Time_____ x 60=_____Pumping Rate in USGPM

Location

For Point of Entry (POE) systems, choose a location where the main cold water line is accessable. The system must be installed after other water treatment equipment (softener or filters), but before any branches (See Figure 1). For Point of Use (POU) systems, install the unit just before the tap. CHANDLER recommends that a 20 micron filter be installed **before** the UV system for a final polishing step before the water is disinfected.

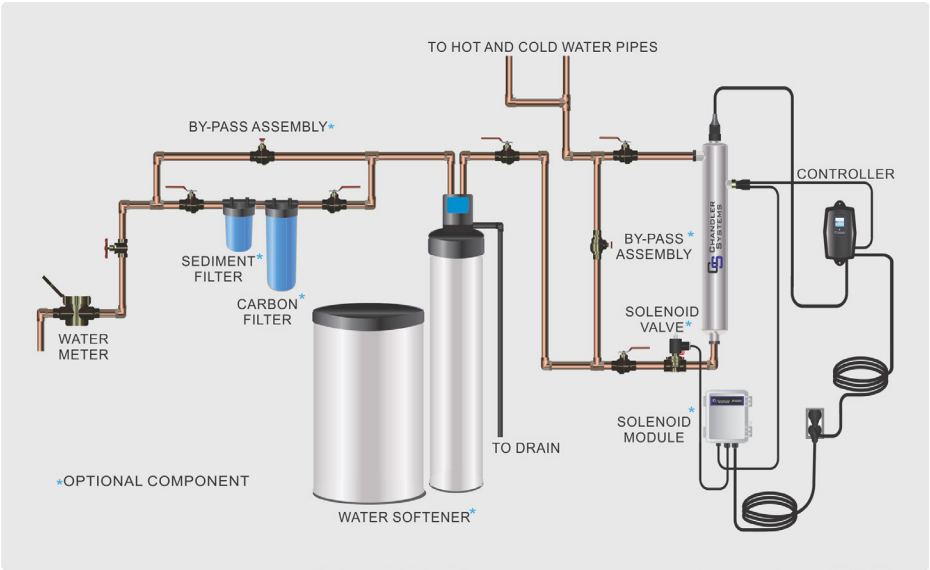


Figure 1. Recommended POE Installation Location

To facilitate lamp removal, ensure there is enough space at the lamp connector end of the UV chamber to safely remove the UV lamp and/or quartz sleeve (See Figure 2).

The controller will require a ground fault circuit interrupter (GFCI or GFI) outlet and should be mounted beside or above the reactor.

PLEASE NOTE: All CHANDLER disinfection systems are intended for indoor use only as they should not be exposed to the elements.

Installation

Step 1: The reactor can be installed either horizontally or vertically using the clamps provided. Vertical installation is the preferred method with the inlet at the bottom (lamp connection at the top) as it allows any air that may be in the pipework to be easily purged from the system.

Step 2: The use of a by-pass assembly is recommended as it will allow you to isolate the UV reactor. This will allow for easier access in case maintenance is required (See Figure 3).

Step 3: Use the supplied fasteners to mount the UV reactor to wood or drywall. If mounting to an alternate material you will need to purchase the proper corresponding fasteners.

Step 4: For water supplies where the maximum flow rate is unknown, a flow restrictor is recommended so that the rated flow of your particular CHANDLER system is not exceeded. The flow restrictor should be installed on the outlet port of the reactor.

Step 5: It is recommended to have a licensed plumber connect the UV reactor to the water supply and may be a requirement depending on where you are located.

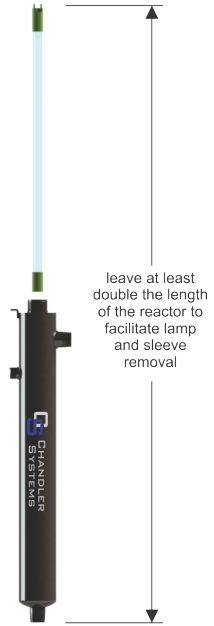


Figure 2. Lamp Removal Spacing

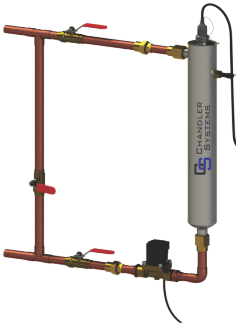


Figure 3.
By-pass assembly

Note: Installation of your CHANDLER disinfection systems should comply with applicable local regulations.

Step 6: Once the system has been plumbed in, gently remove the quartz sleeve from its packaging being careful not to touch the length with your hands. The use of cotton gloves is recommended for this procedure as oils from the hands can leave residue on the sleeve and lamp which can ultimately block the UV light from getting to the water.

Carefully slide the sleeve into the reactor until you can feel it hit the opposite end of the reactor. Align the sleeve so it centered along the length of the reactor, then gently push it in to lock it into the internal centering springs in the far side of the reactor. CAUTION: Pushing too hard when the sleeve is not aligned can damage the centering springs. Slide the o-ring onto the sleeve until it is butted up against the reactor.

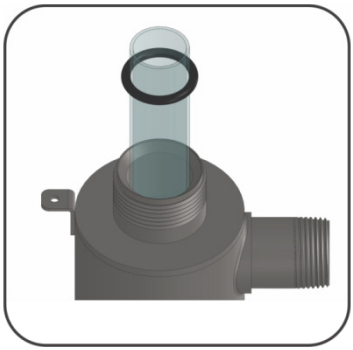


Figure 4. Quartz Sleeve Installation

Step 7: Hand tighten the provided gland nut over the quartz sleeve onto the threaded end of the reactor. It has a positive stop to prevent over-tightening. A firm force may be required to fully tighten the gland nut, but DO NOT USE TOOLS for this step. Insert the provided stainless steel compression spring into the quartz sleeve. The spring works with the lamp and lamp connector to create the proper lamp alignment. **PLEASE NOTE:** DO NOT install a UV lamp inside the quartz sleeve without the sleeve spring in place.

Step 8: Install the UV sensor **(only with UV monitor upgrade)**. Align the flat portion so it faces the gland nut end and matches up with the half metal lip on the sensor port (see Figure 5). Insert the sensor so it is fully seated and hand tighten the sensor nut.

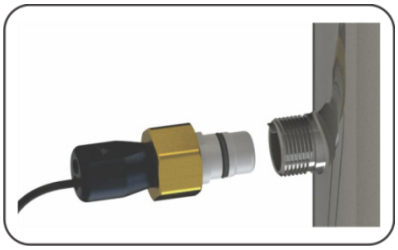


Figure 5. UV Sensor Installation

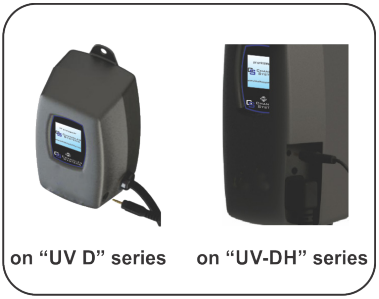


Figure 6. IEP Connection

Step 9: The reactor is now ready for water flow. When all plumbing connections have been completed, slowly turn on the water supply and check for leaks. Make sure the by-pass valves are functioning properly and that the water is flowing through the reactor. The most common leak is from the o-ring not making a proper seal on the reactor. For new installations, review steps 7 and 8. For older systems drain the reactor, remove the o-ring, dry it and reapply silicon grease. Reinstall the o-ring ensuring that it is properly sealed against the reactor and check again for leaks.

Step 10: Mount the controller to the wall so it is above or beside the reactor to ensure that no moisture can deposit on any of the connections (see Figure 1). Always mount the controller vertically. For monitored systems, insert the sensor connector into the IEP port located on the right side of the controller (Figure 6). For the sensor to be recognised by the controller, the controller power must be plugged in last. **Do not plug the controller power cord in before the last step.**

Step 11: Always hold UV lamps by their ceramic ends, not by the lamp quartz. Remove the lamp from its packaging. Again, the use of cotton gloves is recommended. Insert the UV lamp into the reactor, being careful not to drop it.

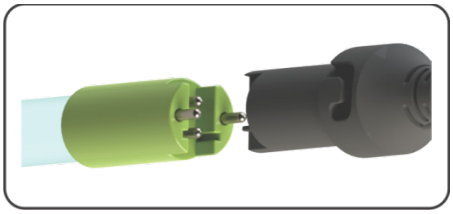


Figure 7a. Standard Output UV Lamp Connection

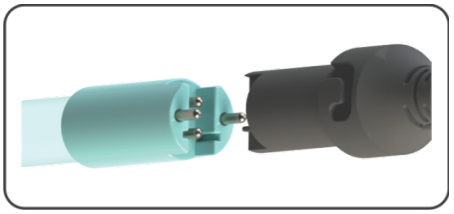


Figure 7b. High Output UV Lamp Connection

Step 12: Plug the lamp connector into the lamp. Note the keying for proper alignment (see Figure 7a, 7b). Insert the lamp connector into the gland nut and turn the connector approximately ¼ turn to lock the connector to the gland nut as in Figure 8.

Figure 8. Lamp Connector

Step 13: Tighten the captive ground screw to the ground lug on the UV reactor to ensure proper grounding.

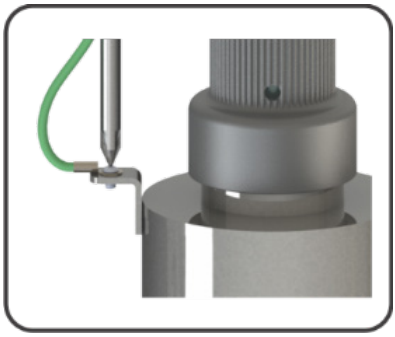


Figure 9. Ground Screw Connection

Step 14: Your system is now ready to be plugged into the appropriate GFCI protected outlet. Refer to the following section before any water is allowed to flow through the system.

System Disinfection

With a new installation, or any time the UV system is shut down for service, without power, or is inoperative for any other reason, the pipework in the home or facility could be contaminated. Use the following steps to fully disinfect the pipework throughout the entire home or facility.

Step 1: Check for and remove any “dead ends” in the pipework throughout the home as these can harbor bacteria. Plug in the UV system and wait until it is ready for operation.

Step 2: Remove the filter cartridge from the last filter housing and fill it with 1-2 cups of household bleach (most are 5.25% chlorine). Replace the filter housing and slowly turn on the water supply.

Step 3: At a water outlet, run the water until bleach can be smelled. Repeat this for all taps, toilets, shower heads, refrigerators, outdoor taps, the washing machine, dishwasher, etc. at the home or facility. Once finished, wait a minumum of 30 minutes before continuing.

Step 4: Reinstall the filter cartridge into the filter housing and flush the chlorine solution by opening all taps until chlorine can no longer be detected. Your home has now been completely disinfected with your CHANDLER system ready to inactivate any microorganisms that enter the home.

Cleaning the Quartz Sleeve

Depending on the water quality, the quartz sleeve may require periodic cleaning. At a minimum, the quartz sleeve should be cleaned on an annual basis. The following steps outline a basic cleaning procedure.

Step 1: If a by-pass assembly is installed, shut the inlet valve off to prevent water flow through the system. Otherwise, turn off main water inlet valve (and/or turn off the water pump).

Step 2: Disconnect power cord of UV system from electrical outlet.

Step 3: Release water pressure by opening a downstream tap and then close the outlet shut-off valve (if any). If there is no outlet shut-off valve, expect water to drain from the system as the head pressure in the system will cause the water to flow back down.

Step 4: Remove the captive ground screw from the ground lug on the UV reactor.

Step 5: Remove the lamp connector from the reactor (gland nut) by pushing the lamp connector in and turning it ¼ turn counter-clockwise. Disconnect the lamp connector from the lamp. CAUTION: the lamp may be hot!

Step 6: Being careful to touch only the ceramic ends, remove the lamp out of the reactor.

Step 7: Unscrew the gland nut from the reactor exposing the end of the quartz sleeve.

Step 8: Remove the quartz sleeve and o-ring by **gently twisting and pulling** the quartz sleeve.

Step 9: Using a soft, lint-free cloth or towel wipe the sleeve down using a commercial scale cleaner (i.e. CLR® or LIME-A-WAY®). This removes scaling or iron deposits that may be on the outside of the quartz sleeve. Be careful not to get any moisture or liquids inside of the sleeve.

Step 10: Dry the sleeve with a separate cloth.

Step 11: Replace the o-ring and slide the sleeve back into the reactor following steps 7 and 8 from the installation section of the manual.

Cleaning the UV Sensor

Depending on the water quality, the UV sensor may require periodic cleaning. At a minimum, the UV sensor should be cleaning on an annual basis. The following steps outline a basic cleaning procedure.

Step 1: If a by-pass assembly is installed, shut the inlet valve off to prevent water flow through the system. Otherwise, turn off main water inlet valve (and/or turn off the water pump).

Step 2: Disconnect power cord of UV system from electrical outlet.

Step 3: Release water pressure by opening a downstream tap and then close the outlet shut-off valve (if any). If there is no outlet shut-off valve, expect water to drain from the system as the head pressure in the system will cause the water to flow back down.

Step 4: Place something under the reactor to catch any water that may come out of the reactor during the removal of the UV sensor.

Step 5: Unscrew (counterclockwise) sensor nut from the reactor and pull the sensor slowly out of the sensor port.

Step 6: Holding the sensor in your hand wipe the flat portion (sensor face) of the sensor with isopropyl alcohol using a clean lint-free cloth.

Step 7: Replace sensor following step 9 from the installation section of the manual.

Temperature Management Devices

Your CHANDLER system is designed to run continuously to ensure optimal disinfection. However, during periods when no water is drawn through the system, the energy from the disinfection process can cause the temperature of the water inside the chamber to rise. In extreme situations elevated water temperature or the fluctuation in temperature can lower the output of the UV lamp. In these cases, or if the elevated water temperature is a nuisance, it is recommended to use one of the following forms of temperature management devices.

Cooling Fan

Designed for use on the UV DH systems, the fan runs continuously to cool the water by forced convection. The long-life fan is powered independently using a compact modular power adapter that operates from 90-265V (47-63Hz). Order PN **UV-FAN3.5**

Temperature Relief Valve (TRV)

On reaching a higher temperature, the TRV is designed to drain a small amount of water to allow fresh, cooler water to enter the system. The TRV works without power and comes complete with 10' of drain line. Order PN **130031** for 1/2" ports, PN **130032** for 3/4" ports, PN **130033** for 1" ports and PN **130034** for 1 1/2" ports.

Operation

The CHANDLER system comes with a feature laden controller that incorporates both the lamp driver (ballast) and control features in one water-tight case. Two controllers are available for the CHANDLER systems (depending on your model).

Controllers

standard-output (UV) controller

The "UV" series controller features a power factor corrected, constant current lamp driver with a universal power input. Simplistic in operation, this system features two LEDs that show lamp status. When the UV lamp is on, the green LED will be illuminated. When the UV lamp is not on, the red LED will be illuminated and an audible buzzer will be sounding. This system does not measure the level of disinfection; it simply measures the "on-off" status of the lamp. Please have your water checked for microbiological contaminants on a regular basis.

standard-output controller "UV D" series

high-output controller "UV-DH" series

The "UV D" and "UV DH" controllers feature a power factor corrected, constant current lamp driver with a universal power input. A full colour LCD screen provides the user with a detailed description of the system's performance in addition to providing any applicable fault messages and system diagnostics. The controllers used in both the monitored and non-monitored systems are identical. All controllers include an "infinite expandability port" located on the right side of the controller. Optional modules like the UV sensor can be plugged into the expandability port of a CHANDLER controller to give additional features.

Power-up Sequence

On start up, the controller will run through a diagnostic start-up and the sequence will be displayed as follows on the colour LCD:

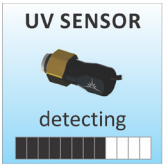
Home Screen

starting diagnostic check

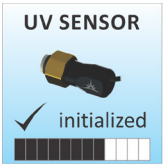
lamp preheats, then starts

Next, the controller checks for and initializes any optional modules that may be attached to the system.

UV Sensor Module Check

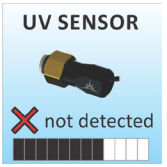


detecting the presence of a UV sensor



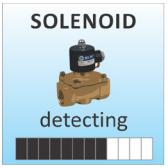
if sensor is present, returns this screen

OR

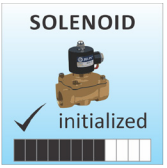


if sensor is not present, returns this screen

Solenoid Module Check

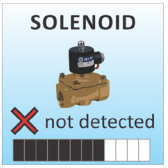


detecting the presence of a solenoid module



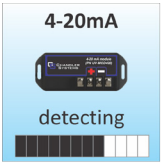
if solenoid module is present, returns this screen

OR

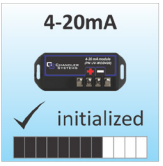


if solenoid module is not present, returns this screen

4-20 mA Module Check

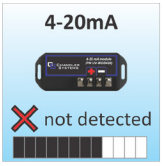


detecting the presence of a 4-20mA module



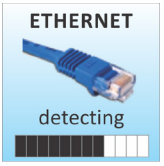
if 4-20mA module is present, returns this screen

OR

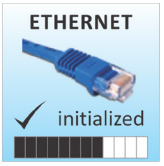


if 4-20mA module is not present, returns this screen

Ethernet Module Check

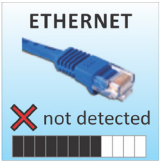


detecting the presence of a ethernet module



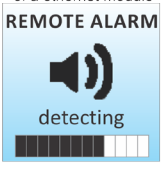
if ethernet module is present, returns this screen

OR

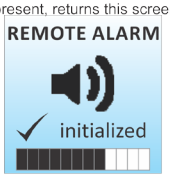


if ethernet module is not present, returns this screen

Remote Alarm Module Check

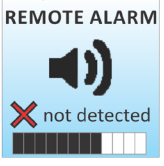


detecting the presence of a remote alarm module



if remote alarm module is present, returns this screen

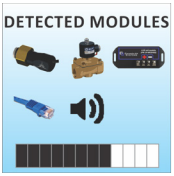
OR

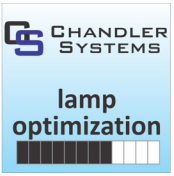


if remote alarm module is not present, returns this screen

A final module screen is displayed showing which specific modules were initialised.

The controller then displays the lamp optimisation screen for 60 seconds to allow the lamp to reach its optimum output, followed a final “start-up complete” screen. The system will now be ready to disinfect water flow.





Operational Screens

On systems without the UV monitor, the default screen shows the **CHANDLER Home Screen**. At any point during operation the user is able to scroll through the **CHANDLER Home Screen, Lamp life remaining** and **QR Code/Contact Info** screens by pressing the push button located on the front of the controller.

standard-output controller
“UV D” series

Home Screen

press button once

press button twice

high-output controller
“UV-DH” series

Home Screen

press button once

press button twice

Operational Screens with UV Monitor Upgrade

On systems that have the UV sensor installed, the default screen shows the **UV Intensity**. At any point during operation the user is able to scroll through the **UV Intensity**, **Lamp life remaining** and **QR Code** screens by pressing the button located on the front of the controller.

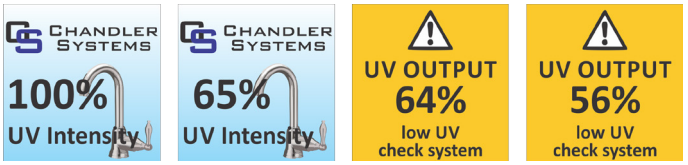
Home Screen

press button once

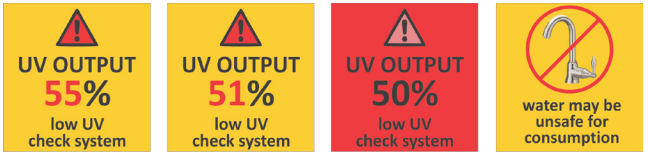
press button twice

UV Intensity (with UV Monitor Upgrade)

The UV Intensity screens display the level of UV light detected by the sensor. UV intensity can be affected by poor water quality, scaling on the quartz sleeve and/or sensor, lamp failure or lamp expiring. The following screens show the UV Intensity dropping.



Below 56%, the numbers and warning sign turn red and an audible chirp is given by the ballast every 15 seconds. Below 51%, the screen is solid red and a constant audible alarm is given. This alternates with a screen indicating “water may be unsafe for consumption”. With the solenoid module, the controller de-activates the solenoid valve, shutting off all water flow.

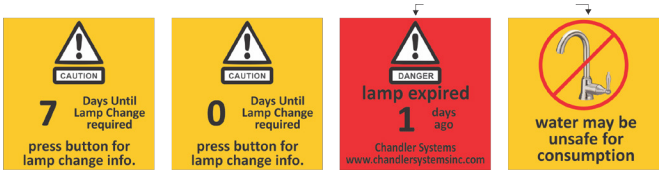


15 sec. audible chirp | 15 sec. audible chirp | constant alarm

Lamp Countdown Sequence

The system counts down the number of days until a lamp change is required.

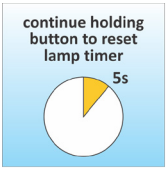
At seven days remaining, the screen changes to a yellow caution screen with an audible chirp every 15 seconds. Past the zero day threshold, the screen changes to solid red and cycles between a red “lamp expired” screen and a “water may be unsafe for consumption” screen. The same intermittent audible chirp is heard throughout this lamp expired sequence.



At any point during this sequence, the audible chirp can be deferred by holding the controller button down for a period of five seconds, after which the screen below will be displayed. After the seven days deferral expires, the alarm will sound once again. The deferral can be repeated as many times as you wish. **PLEASE NOTE:** At any point after lamp expiration, the water may be unsafe for consumption and should not be consumed without another form of disinfection.

Lamp Countdown Reset Sequence

When changing the lamp, the day countdown timer must be reset to match the newly installed lamp. To reset, firmly hold down the button on the controller while plugging the power cord back into the outlet. Continue holding down the button for five seconds as indicated until you hear an audible chirp confirming the timer has been reset. The following two screens will be displayed during this process.



Failure Modes

Hard Alarms: The following give a constant audible alarm. If present, the solenoid valve is closed, and the 4-20, Volt free and ethernet module transmit the alarm.

Lamp Failure	UV Sensor Failure
	 

Soft Alarms: The following remaining errors give a 15 second audible chirp only

Solenoid Module Failure	4-20mA Module Failure	Volt Free module failure	Ethernet module Failure
			

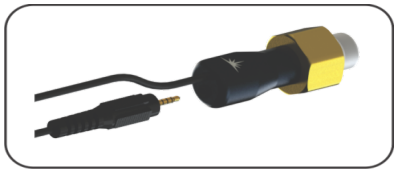
Boil Water Advisory: If any failure occurs on a CHANDLER system, the water must not be used for human consumption until the system is returned to a safe operational mode. If the water is used for human consumption during this period, the water must be boiled (minimum 20 minutes at a full boil) prior to consumption.

QR Codes

A **QR code** (Quick Response code) is a matrix barcode first designed for the automotive industry. CHANDLER uses the QR code to store a link to a specific page on our website. Users with a camera phone equipped with the correct reader application can scan the image of the QR code and over a wireless network connect to a CHANDLER web page in the phone's browser. CHANDLER's QR webpage has information on how to purchase replacement components as well as a helpful video directory on system servicing (i.e. How to change a UV lamp or quartz sleeve). To access the QR code on the CHANDLER controller, press the control button twice and the QR code screen will appear as follows:

Expansion Modules

CHANDLER controllers incorporate an "**Infinite Expandability Port**" (**IEP**) which allows for expansion to the UV sensor and all other modules. Each module (including the sensor) comes with both a male and female connection. Connect any device to the controller and all subsequent devices are then connected into the female end of last device added in a "daisy chain" configuration.



The following optional expansion modules are available for use on CHANDLER controllers. Contact your authorised distributor for purchasing information.

DRY CONTACT (VOLT FREE) CONNECTION MODULE: Allows for a connection to a remote device such as a buzzer, light, alarm system, PLC, etc., via a pair of contacts. In normal operation the OK and COM contacts will be connected, and in a fault condition (Low UV, Lamp fail, Power Fail), the Fault and COM contacts will be connected. Maximum Contact Rating is 1A-120-230V AC/DC (use 16-22 AWG). Order PN **UV-MODRAM**

SOLENOID CONNECTION MODULE: Connects a NORMALLY CLOSED line voltage solenoid valve to the system. On a non-monitored system, the solenoid will only close on a lamp failure error. On a monitored system, the solenoid is closed when the UV level drops below 50%. Also note that in cases where emergency use of untreated water is required, the controller can be placed into a manual override mode allowing for the flow of water in an alarm condition. Order PN **UV-MODSOL**

4-20 mA MODULE: Outputs a 4-20mA signal of the UV output to a remote device such as a data logger or computer. Order PN **UV-MOD420**

Coming Soon

ETHERNET MODULE: Allows for all controller functions to be connected to a computer via an Ethernet cable (LAN) or via WiFi.

CHANDLER Standard Output System Specifications

CHANDLER SYSTEMS	CHANDLER EQUIPMENT SPECIFICATIONS				
	Residential systems (standard output lamps)				
MODEL	**UV3D**	**UV6D UV6DM**	**UV11D UV11DM**	**UV15D UV15DM**	**UV20D UV20DM**
Flow Rate 30mJ/cm² @ 95% UVT	3.1 gpm	5.8 gpm	11 gpm	15 gpm	21 gpm
	11.4 lpm	22.7 lpm	41 lpm	57 lpm	79 lpm
	0.7 m³/hr	1.4 m³/hr	2.5 m³/hr	3.4 m³/hr	4.8 m³/hr
Flow Rate (@16mJ/cm²)	6 gpm	11 gpm	20 gpm	30 gpm	39 gpm
	23 lpm	41 lpm	77 lpm	114 lpm	150 lpm
	1.4 m³/hr	2.5 m³/hr	4.6 m³/hr	6.8 m³/hr	8.9 m³/hr
Flow Rate 40mJ/cm² @ 95% UVT	2.4 gpm	4.4 gpm	8.3 gpm	12 gpm	16 gpm
	9.1 lpm	17 lpm	31 lpm	45.4 lpm	59 lpm
	0.5 m³/hr	1.0 m³/hr	1.9 m³/hr	2.7 m³/hr	3.6 m³/hr
Port Size	½"MNPT	¾"MNPT	¾"MNPT	1"MNPT	1"MNPT
Electrical	90-265V/50-60Hz.				
Plug Type	American: NEMA 5-15P				
Lamp Power (Watts)	15	22	39	50	42
Power (Watts)	20	30	49	62	51
Replacement Lamp	UVLMP-3	UVLMP-6	UVLMP-11	UVLMP-15	UVLMP-20
Replacement Sleeve	UVQTZ-3	UVQTZ-6	UVQTZ-11	UVQTZ-15	UVQTZ-20
Reactor Dimensions	6.4 x 36.4 cm (2.5 x 14.3")	6.4 x 54.2 cm (2.5 x 21.3")	6.4 x 89.5 cm (2.5 x 35.2")	6.4 x 101.6 cm (2.5 x 40.0")	8.9 x 91.7 cm (3.5 x 36.1")
Chamber Material	304 Stainless Steel, A249 Pressure Rated Tubing				
Controller Dimensions	17.2 x 9.2 x 7.6 cm (6.8 x 3.6 x 3")				
Operating Pressure	0.7-10.3 bar (10-150 psi)				
Operating Water Temperature	2-40° C (36-104° F)				
UV Monitor Port	NO	YES on all "DM" models. Upgrade available for all others			
Solenoid Output	YES (optional solenoid module (UV-MODSOL) sold separately)				
Dry Contacts	YES (remote alarm module (UV-MODRAM) sold separately)				
4-20mA Output	YES (4-20mA module (UV-MOD420) sold separately)				
Temperature Mgmt. Valve	PN# 130131	PN# 130132		PN# 130133	
Cooling Fan	NO				OPTIONAL (UV-FAN3.5)
Lamp Change Reminder (audible & visual)	YES				
Lamp Out Indicator (audible & visual)	YES				
Shipping Weight	3.3 kg (7.3 lbs)	4.2 kg (9.3 lbs)	6.8 kg (15.0 lbs)	8.0 kg (17.6 lbs)	7.5 kg (16.5 lbs)

CHANDLER High Output System Specifications

CHANDLER SYSTEMS	CHANDLER EQUIPMENT SPECIFICATIONS Multi-Use Systems (high output lamps)				
MODEL	**UV-5DH UV-5DHM**	**UV-10DH UV-10DHM**	**UV-15DH UV-15DHM**	**UV-25DH UV-25DHM**	**UV-40DH UV-40DHM**
Flow Rate 30mJ/cm² @ 95% UVT	4.0 gpm	10 gpm	14 gpm	25 gpm	40 gpm
	15 lpm	38 lpm	53 lpm	95 lpm	151 lpm
	1.1 m³/hr	2.3 m³/hr	3.2 m³/hr	5.7m³/hr	9.1m³/hr
Flow Rate 40mJ/cm² @ 95% UVT	3.0 gpm	7.0 gpm	11 gpm	19 gpm	31 gpm
	15 lpm	27 lpm	41 lpm	72 lpm	117 lpm
	0.7 m³/hr	1.6 m³/hr	2.5 m³/hr	4.3 m³/hr	7.0 m³/hr
Flow Rate Hot Water (-HW suffix) model 30mJ/cm² @ 75% UVT	2.8 gpm	7.0 gpm	9.8 gpm	16 gpm	28 gpm
	11 lpm	26 lpm	37 lpm	61 lpm	110 lpm
	0.6 m³/hr	1.6 m³/hr	2.2 m³/hr	3.6 m³/hr	6.4 m³/hr
Flow Rate Low UVT (-50 suffix) model 30mJ/cm² @ 50% UVT	1.7 gpm	4.2 gpm	6.0 gpm	10 gpm	17 gpm
	6.4 lpm	16 lpm	23 lpm	38 lpm	64 lpm
	0.4 m³/hr	1.0 m³/hr	1.4 m³/hr	2.3 m³/hr	3.9 m³/hr
Flow Rate TOC (-TOC suffix) model 150mJ/cm² @ 98% UVT	0.8 gpm	2.0 gpm	2.8 gpm	5.0 gpm	8.0 gpm
	3.0 lpm	7.6 lpm	11 lpm	19 lpm	30 lpm
	0.2 m³/hr	0.5 m³/hr	0.6 m³/hr	1.1 m³/hr	1.8 m³/hr
Port Size	¾"MNPT	¾"MNPT	1"MNPT	1"MNPT	1 ½"MNPT
Electrical	90-265V/50-60Hz.				
Plug Type	American: NEMA 5-15P				
Lamp Power (Watts)	18	34	45	67	101
Power (Watts)	20	36	48	72	108
Replacement Lamp	UVLMP-4H	UVLMP-10H	UVLMP-15H	UVLMP-25H	UVLMP-40H
Replacement Sleeve	UVQTZ-4H	UVQTZ-10H	UVQTZ-15H	UVQTZ-25H	UVQTZ-40H
Reactor Dimensions	8.9 x 29.8 cm (3.5 x 11.7")	8.9 x 41.8 cm (3.5 x 16.5")	8.9 x 50.8 cm (3.5 x 20.0")	8.9 x 68.3 cm (3.5 x 26.9")	8.9 x 103.4 cm (3.5 x 40.7")
Chamber Material	316L Stainless Steel, A249 Pressure Rated Tubing				
Controller Dimensions	21.7 x 10.8 x 8.9 cm (8.6 x 4.2 x 3.5")				
Operating Pressure	0.7-10.3 bar (10-150 psi)				
Operating Water Temperature	2-40° C (36-104° F)				
UV Monitor Port	YES (optional UV monitor (UVS-3.5) sold separately)				
Solenoid Output	YES (optional solenoid module (UV-MODSOL) sold separately)				
Dry Contacts	YES (remote alarm module (UV-MODRAM) sold separately)				
4-20mA Output	YES (4-20mA module (UV-MOD420) sold separately)				
Temperature Mgmt. Valve	PN# 130132		PN# 130133		PN# 130134
Cooling Fan	OPTIONAL (UV-FAN3.5 sold separately)				
Lamp Change Reminder (audible & visual)	YES				
Lamp Out Indicator (audible & visual)	YES				
Shipping Weight	4.5 kg (9.9 lbs)	5.4 kg (11.9 lbs)	6.0kg (13.2 lbs)	7.2 kg (15.9 lbs)	9.7 kg (21.4 lbs)

Chandler Systems Limited Warranty Statement

Products manufactured by CHANDLER are warranted to the original user only to be free of defects in material and workmanship for a period as specified below. This warranty only applies to the original purchaser and is not transferable.

UV SYSTEMS

Ten (10) year Limited Warranty on the stainless steel reactors, from the date of original purchase, or installation (proper documentation required for verification).

ELECTRONICS

Three (3) year Limited Warranty on the ballasts and controllers, from the date of original purchase, or installation (proper documentation required for verification).

UV LAMPS, UV SENSORS & QUARTZ SLEEVES

One (1) year Limited Warranty on all CHANDLER ultraviolet lamps, UV sensors and quartz sleeves from the date of original purchase, or installation (proper documentation required for verification).

This CHANDLER Ultraviolet Disinfection System will be repaired or replaced, at our sole option, providing that the ultraviolet system or any component is defective in materials or workmanship for the periods outlined above and subject to the "Limitations of Warranty" as outlined below. CHANDLER's liability under this warranty shall be limited to repairing or replacing the product, without charge, F.O.B. CHANDLER's closest Distribution Facility or authorized service depot. CHANDLER will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. CHANDLER will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with the Manufacturers printed installation and operating instructions.

LIMITATIONS OF WARRANTY

This warranty does not apply to any of the following:

- Water Quality Parameters lie outside of the following ranges
  - Hardness > 120 mg/L (7 gpg)
  - Iron > 0.3 mg/L (ppm)
  - Manganese > 0.05 mg/L (ppm)
  - Tannins > 0.1 mg/L (ppm)
  - Turbidity > 1 NTU
  - Transmittance (UVT) < 75%
- A product that has been incorrectly installed according to the technical installation manual.
- A product that has been modified in any manner, unless approved by the manufacturer.
- A product where the serial number has been altered defaced or removed.
- Damage caused by the use of parts that are not compatible, suitable and/or authorized by CHANDLER for use with the product (e.g. non-original lamps or sleeves).
- Damage caused during shipment of the product.
- Water damage is found inside ballast housing or controllers.
- Product is installed outdoors in direct contact with the environment (rain).
- Product is installed in freezing temperatures.
- Product is used in conditions that exceed CHANDLER's specifications.

TO GET WARRANTY SERVICE

To obtain service under this warranty, you must first contact CHANDLER Customer Service at (888) 363-9434 to obtain a Warranty Return Authorization. You will then need to return the product through the CHANDLER Dealer or Distributor where the product was originally purchased, together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, the Dealer or Distributor will contact CHANDLER for instructions on returning the product. Any defective product to be returned to CHANDLER must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

CHANDLER INC. WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE.

THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY MADE BY CHANDLER WITH RESPECT TO THIS ULTRAVIOLET DISINFECTION PRODUCT, AND IS GIVEN IN LIEU OF ANY OTHER WARRANTY. TO THE EXTENT ALLOWED BY APPLICABLE LAW, ANY AND ALL EXPRESS OR IMPLIED WARRANTIES NOT SET FORTH HEREIN ARE WAIVED AND DISCLAIMED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE. CHANDLER'S LIABILITY UNDER THIS LIMITED WARRANTY IS LIMITED SOLELY TO THOSE LIABILITIES SET FORTH ABOVE. IN THE EVENT THAT ANY PROVISION OF THIS LIMITED WARRANTY SHOULD BE FOUND TO BE OR BECOME INVALID OR UNENFORCEABLE UNDER APPLICABLE LAW, THE REMAINING TERMS AND CONDITIONS HEREOF SHALL REMAIN IN FULL FORCE AND EFFECT AND SUCH INVALID OR UNENFORCEABLE PROVISION SHALL BE CONSTRUED IN SUCH A MANNER AS TO BE VALID AND ENFORCEABLE.

Warranty Registration

It is imperative that you complete the warranty registration process. This not only registers your UV disinfection system for the provided manufacturer's warranty, but also allows the factory to provide you with any important product updates or technical bulletins concerning your product. To register, completely fill out the included warranty card, including a valid e-mail address. **PLEASE NOTE:** This information is for the sole purpose of technical support for your disinfection system and will not be used, or sold, to any other organization for any other purpose.

CHANDLER SYSTEMS

Chandler Systems
710 Orange Street
Ashland, OH 44805
Phone (888) 363-9434
www.chandlersystemsinc.com

EPA Establishment
#088776-CAN-001

PN#910181