



Installation and Operation Manual

T-Series™

Models: UVG T10, UVG T18, UVG T30, UVG T40 & UVG T75



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

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1. Important Information

Prior to assembling and installing your T-Series, take time to familiarise yourself with all sections of this installation and operation manual. UV-Guard Service Australia Pty Ltd holds no responsibility for the misuse of the T-Series as a result of failure to thoroughly read and understand this manual.

If after reading this manual you have concerns or questions, contact the UV-Guard team immediately. The T-Series must be used in accordance with this installation and operation manual.

2. Introduction

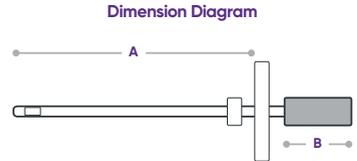
UV-Guard's versatile T-Series can be used in any application where there is a need to protect stored water, liquid, powders or any other product from harmful pathogens.

Installed in storage tank headspaces, the T-Series disinfects air, internal tank walls and product surfaces.

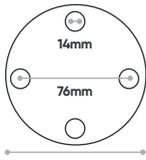
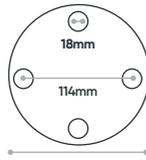
It can also be submerged to directly disinfect stored liquids and acts as a deterrent to prevent pests from entering tanks.

There are five models in the range to suit small tanks up to larger tanks where multiple T-Series can be employed.

Model	Connection Type Available	Lamp Power (W)	A Length within Tank (mm)	B Maintenance length required (mm)
UVG T10	¾" Table D, 2" Table D, 2" Tri-Clover, 1 ½" Male BSPT	10	170	200
UVG T18		20	300	300
UVG T30		30	510	600
UVG T40		40	840	1000
UVG T75		80	840	1000



Each model can be supplied with a choice of four connection types as shown below.

¾" Table D	2" Table D	2" Tri-Clover	1 ½" Male BSPT
			
			 Bulk Head Fitting (optional)

There are a range of controllers available to suit your unique needs.

Controllers	Models	Features
Basic Indoor Controllers 	T10, T18, T30, T40	Indoor use, lamp on/off LEDs, audible lamp fail alarm.
	T75	
Basic Weatherproof Controllers 	T10, T18, T30 T40, T75	Weatherproof IP65, lamp on/off LEDs.
Digital Indoor Controllers 	T10, T18, T30, T40, T75	Indoor use, digital lamp life timer, lamp on/off LEDs, audible lamp fail alarm, volt free alarm contacts.
Weatherproof PLCs 	T10, T18, T30, T40, T75	<p>Standard Weatherproof IP65, digital lamp life timer, lamp on/off LEDs, audible lamp fail alarm.</p> <p>Customised One controller to operate multiple T-Series, lamp safety interlocking device, volt free alarm contacts, personalised software and fascia, other features to suit.</p>

3. Safety Information

Read this information carefully. It contains important information on how to use the T-Series safely.

Human exposure to UVC radiation is extremely dangerous. The T-Series must not be turned on without it being installed within a tank or behind baffles that prevent the UV rays from escaping.



All components of the T-Series must be properly assembled prior to connecting the device to power. If a fault occurs or if the device is damaged in any way during operation, power must be disconnected immediately. When the UV Lamp needs to be replaced or the protective Quartz Sleeve cleaned, power must be disconnected before disassembling the components required to access these parts.



4. Receiving your T-Series

When receiving your T-Series, ensure that all components have been supplied. If you are missing a component, or if something is broken upon delivery, contact UV-Guard within 48 hours.

Refer to the below box contents table:

Component	Qty
Stainless Steel Mounting Bracket/Tank Connector	1
Controller with power plug and lamp lead	1
M3 Screws	3
UV Lamp	1
Quartz Sleeve	1
O-Ring Seals	2
End Cap Gasket	1

5. Assembling and Installing your T-Series

Equipment Required:

- Philips Screwdriver
- Cotton Gloves or Cloth

It is recommended that cotton gloves or a cloth is used when handling the UV Lamp and Quartz Sleeve. Any fingerprints, dust or dirt on these components must be cleaned off using the provided Alcohol Wipe. Contamination on these components will result in a decrease in UV Disinfection performance. A food grade silicon based lubricant must be used on the O Rings.

5.1 Controller Installation

Familiarise yourself with the controller that has been purchased. It may need to be installed indoors or it may be weatherproof. If you are unsure, contact UV-Guard or check the previous sections of this manual.

The controller must be mounted in a way that allows the lamp lead to reach the T-Series installed on the tank.

The Digital Indoor Controllers and Weatherproof PLCs may have been supplied with additional features such as volt free alarm connection.

For the digital indoor controllers, refer to the wiring diagram on the controllers itself.

For the Weatherproof PLC controller, refer to the following:

Lamp Fault BMS Connection (VFC) for Weatherproof PLCs

This relay will energise when the power is applied and the UV Lamp is operating correctly (Blue wire – UV Lamp operating correctly, Black wire – UV Lamp Failure).

1. Identify the BMS cable by checking the labels on the underside of the PPLC box.
2. Make the required electrical connections based on the following wire details:
 - a. Blue wire = Normally open contact (closes when UV Lamp is on)
 - b. Brown wire = Common
 - c. Black wire = Normally closed contact

5.2 Quartz Sleeve Installation

Please note, the images shown in the following sections use the 1 1/2" male BSPT Tank Connector. The Quartz Sleeve is installed in the same way for all tank connection types.

1. Locate the Quartz Sleeve, sealing O-Rings and stainless steel Tank Connector.

Unscrew the two nuts located on each side of the stainless steel Tank Connector.



2. Place a sealing O-Ring into the Small Nut.



3. Slowly feed the Small Nut onto the open end of a new Quartz Sleeve with the female thread facing the open end. Use cotton gloves or a cloth when handling the new Quartz Sleeve.



4. Place an O-Ring into the designated position within the Power Nut.



5. Slowly feed the stainless steel Tank Connector onto the Quartz Sleeve.

Slowly push the open end of the Quartz Sleeve through the O-Ring in the Power Nut. You may need to rotate the Quartz Sleeve until it slips through the O-Ring. Push the Quartz Sleeve past the O-Ring until it is stopped by the wall inside the Power Nut.



6. Begin to slowly screw the Power Nut onto the Tank Connector until it is hand tight.



7. Take the Small Nut and screw it onto the stainless steel Tank Connector until it is hand tight. The Quartz Sleeve should now be secure.

5.3 Tank Installation

Please note that it is not recommended to install the UV Lamp until the T-Series with Quartz Sleeve installed has been mounted onto the tank.

The Controller must be able to be connected to the T-Series and so care must be taken to establish the installation position of the controller.

The method of mounting the T-Series into the tank depends on the connection type purchased. See below summary of how each T-Series connection type is recommended to be mounted onto the tank.

3/4" & 2" Table D Connection Types



1. Establish the mounting position on the tank. If multiple T-Series are being employed, ensure these will be equally spaced out or as advised by UV-Guard.
2. Using the four mounting hole locations on the Tank Connector, drill into tank. Establish the type of fixing screw or bolt used to determine the size of the drill size required.
3. Drill a fifth hole in the centre of the four mounting holes to allow the Quartz Sleeve and small Sealing Nut to pass into the tank. This needs to be 40mm in diameter.
4. Feed Quartz Sleeve through the tank hole, line up the mounting holes and secure into position.

* Alternatively, the 2" Table D Connection type can be mounted to an adjoining Table D flange that has been welded onto the tank. It is recommended that a gasket is installed between the two flanges.

2" Tri-Clover Connection Type



1. Establish the mounting position on the tank. If multiple T-Series are being employed, ensure these will be equally spaced out or as advised by UV-Guard.
2. Weld a 2" Tri-Clover fitting onto the tank.
3. Feed Quartz Sleeve through the tank hole.
4. Place gasket over Tr-Clover fitting and secure into position.

1 1/2" Male BSPT Connection Type



1. Establish the mounting position on the tank. If multiple T-Series are being employed, ensure these will be equally spaced out or as advised by UV-Guard.
2. Install a 1 1/2" tank connection into the tank such as a Bulk Head Fitting.
3. Add thread tape to the male thread on the Tank Connector.
4. Feed Quartz Sleeve through the tank fitting and screw T-Series into position.

5.4 UV Lamp Installation & Turning T-Series on

It is recommended that the UV lamp is not installed until the Quartz Sleeve is installed and the T-Series is mounted securely onto the tank.

1. Locate the UV Lamp and slowly feed the smooth end through the Power Nut. Leave the pin end of the UV Lamp exposed out of the Power Nut. Ensure that cotton gloves or a cloth is used when handling the UV Lamp. Alternatively, touch the ceramic ends only. Clean any fingerprints, dust or dirt off the UV Lamp.



2. Feed the black gasket over the UV Lamp. Locate the lamp lead and connector from the Controller.

Do not plug the Controller into power.

3. Grip the ceramic pin end of the UV Lamp and push in the 4-pin lamp plug connected to the Controller. Ensure the 4-pin lamp plug and lamp pins are fully connected.

Take care not to drop the UV Lamp into the Quartz Sleeve as this could result in damage.



4. Slowly ease the UV Lamp into the Quartz Sleeve until the Controller lamp lead End Cap meets the end of the Power Nut. The black gasket must be compressed inbetween.

5. Line up the three holes on the end of the Power Nut with those on the black gasket and lamp lead End Cap.

Locate the M3 screws and pass them through the lamp lead End Cap holes. Begin to slowly screw them into the holes on the end of the Power Nut.

Do not tighten all the way initially. Work your way around each screw, tightening a bit at a time until the screws cannot be tightened any more. Do not tighten to the point of screw head damage.

Ensure the lamp lead End Cap is compressed against the Power Nut end. The end cap must not be loose at any time.



6. Turn power on to the Controller

6. Servicing your T-Series

The T-Series requires the following maintenance activities to be undertaken to ensure optimum UV Disinfection performance.

- Replace UV Lamp annually
- Inspect and Clean Quartz Sleeve annually
- Replace O-Ring Seals annually
- Replace Quartz Sleeve every 2 years or when it is too dirty to clean

Contact UV-Guard for spare parts required. Using alternative spare parts will jeopardise UV system performance and warranty to be voided.

6.1 Replacing the UV Lamp

1. Contact your UV-Guard distributor to receive a new UV Lamp.
2. Ensure the Controller is unplugged from power
3. Slowly unscrew the three M3 screws located on the end of the Power Nut. This will allow the lamp lead End Cap to be removed.



4. Pull the lamp lead End Cap away from the Power Nut. In doing so, the UV Lamp and lamp connector will now be visible.



5. Grip the ceramic pin end of the UV Lamp and disconnect the 4-pin lamp plug.



6. Slowly pull the UV Lamp out of the Power Nut. Follow your local disposal regulations and dispose of old UV Lamp sustainably.



7. Locate the new UV Lamp and slowly feed the smooth end through the Power Nut. Leave the pin end of the UV Lamp exposed out of the Power Nut. Ensure that cotton gloves or a cloth is used when handling the UV Lamp. Alternatively, touch the ceramic ends only. Clean any fingerprints, dust or dirt off the UV Lamp.



8. Connect the UV Lamp to the 4-pin lamp plug.

Push the UV Lamp into the Power Nut until the Controller lamp lead End Cap meets the end of the Power Nut.



9. Line up the three holes on the end of the Power Nut with those on the lamp lead End Cap.

Locate the M3 screws and pass them through the lamp lead End Cap holes. Begin to slowly screw them into the holes on the end of the Power Nut.

Do not tighten all the way initially. Work your way around each screw, tightening a bit at a time until the screws cannot be tightened any more. Do not tighten to the point of screw head damage.

Ensure the lamp lead End Cap is compressed against the Power Nut end. The end cap must not be loose at any time.

10. If you have a digital indoor or Weatherproof PLC Controller, you will need to re-set the lamp life timer.



6.2 Cleaning Quartz Sleeve

1. Refer to Steps 2-6 of 'Replacing the UV Lamp' section.
2. Slowly remove Tank Connection from the tank.

The Quartz Sleeve will be attached. Take care not to damage any components.



3. Clean the Quartz Sleeve using an alcohol wipe. Take care not to directly touch the Quartz Sleeve with fingers as this can impact the performance.



4. Slowly re-install Tank Connection to the tank.

Do not overtighten and do not use tools.



5. Refer to Steps 7-9 of 'Replacing the UV Lamp' section.

6.3 Replacing the Quartz Sleeve and O-Ring Seals

1. Contact your UV-Guard distributor to receive a new Quartz Sleeve and O-Ring Seals.
2. Refer to Steps 1-2 of 'Cleaning the Quartz Sleeve' section.
3. Slowly unscrew the Small Nut located around the Quartz Sleeve from the Screw Assembly.
4. Slowly unscrew the Power Nut from the Screw Assembly. The Quartz Sleeve can now be removed.

Take care when handling the Quartz Sleeve as it may be sharp if damaged.



5. Place a new O-Ring Seal into the Small Nut. Slowly feed the Small Nut onto the open end of a new Quartz Sleeve with the female thread facing the open end. Use cotton gloves or a cloth when handling the new Quartz Sleeve.



6. Slowly feed the Screw Assembly over the open end of the new Quartz Sleeve so that the open end of the Quartz Sleeve is passed through the Screw Assembly.



7. Place an O-Ring into the designated position within the Power Nut.



8. Slowly push the open end of the Quartz Sleeve through the O-Ring in the Power Nut. You may need to rotate the Quartz Sleeve until it slips through the O-Ring. Push the Quartz Sleeve past the O-Ring until it is stopped by the wall inside the Power Nut.



9. Begin to slowly screw the Power Nut onto the Screw Assembly until it is hand tight.

10. Take the Small Nut and screw it onto the Screw Assembly until it is hand tight. The Quartz Sleeve should now be secure.



11. Refer to *Steps 3-5 of 'Cleaning the Quartz Sleeve'* section.

6.4 Servicing and Operating the Digital Indoor 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.

6.5 Servicing and Operating the Weatherproof PLC 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.



The screenshot shows the UVG Weatherproof PLC display interface. At the top left is the uvguard logo with the tagline "Safeguarding your water." Below the logo are three status indicators: "Power", "Lamp On", and "Lamp Fail", each with a small circle icon. To the right of these indicators is a digital display showing "UVI = 0.0%" and "9000:52:15". Below the display are four control buttons: "Mode", an up arrow, a down arrow, and "Enter". At the bottom of the screen, there is contact information: a phone icon followed by "+61 1300 052 052", an email icon followed by "sales@uvguard.com", and a globe icon followed by "uvguard.com". Below the contact information is the text "Proudly made in Australia."

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.

2. Lamp Timer Reset

Follow the following steps.

- 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

3. 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.

4. 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	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.
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.
End of life	Initiated if there is a remote enable option with setting to remotely turn off the system.
Mute the Alarm?	If the system has a lamp safety interlock system, this will be displayed in the event of lamp interlock initialisation.
UV System is OFF	Alarm initiated when lamps or ballast has stopped working. Contact your UV-Guard distributor.
SAFETY INTERLOCK	If the system has a lamp safety interlock system, this will be displayed in the event of lamp interlock initialisation.
Service Required	Alarm initiated when lamps or ballast has stopped working. Contact your UV-Guard distributor.

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.

NON-ELECTRICAL COMPONENTS

UV-GUARD will grant a two (2) year warranty from the date of purchase for the UV Reactor. Faults regarding the material and workmanship of these components 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 damage to threads as a result of mishandling.

ELECTRICAL COMPONENTS

UV-GUARD will grant a one (1) year warranty from the date of purchase for the Controller.

UV-GUARD will grant a one (1) year warranty from the date of purchase, if the UV Lamp fails due to faults regarding material and workmanship. UV Lamp warranty will be voided if the unit is switched on and off more than 4 times per day or if the system or UV Lamp is mishandled.

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.



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