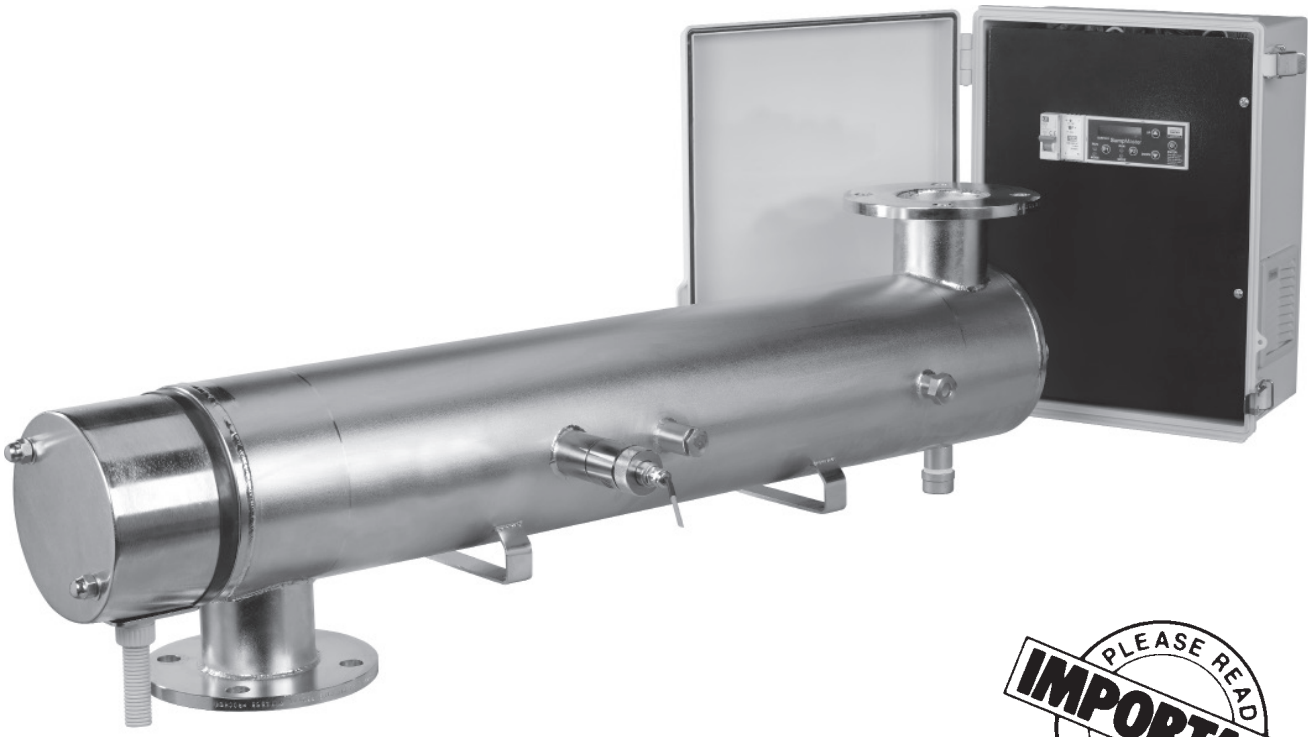
microlene

Steriflo®
UV Steriliser

Operation Manual

Model numbers: ALX2, ALX2/6, ALX2/8, ALX4/6, ALX4/8, ALX6/10, ALX8/10



PLEASE READ IMPORTANT CAREFULLY

Please pass these instructions on to the operator of this equipment.

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Version History

This manual covers the software applications for Version No. 29.11.00 or later.
Please contact Davey Water Products to obtain any verification of the currency of this manual for your application.

INTRODUCTION

The Microlene Steriflo Control system is a fully integrated controller which monitors and ensures the correct functioning of the Steriflo UV steriliser. The controller will monitor for correct functioning of UV lamps and perform system checks and indicate when a fault exists or maintenance is due. Alarms, faults and maintenance schedules can be varied for different system setups and maintenance preferences (e.g. UV lamp life recommendations and/or site experience about cleaning frequency).

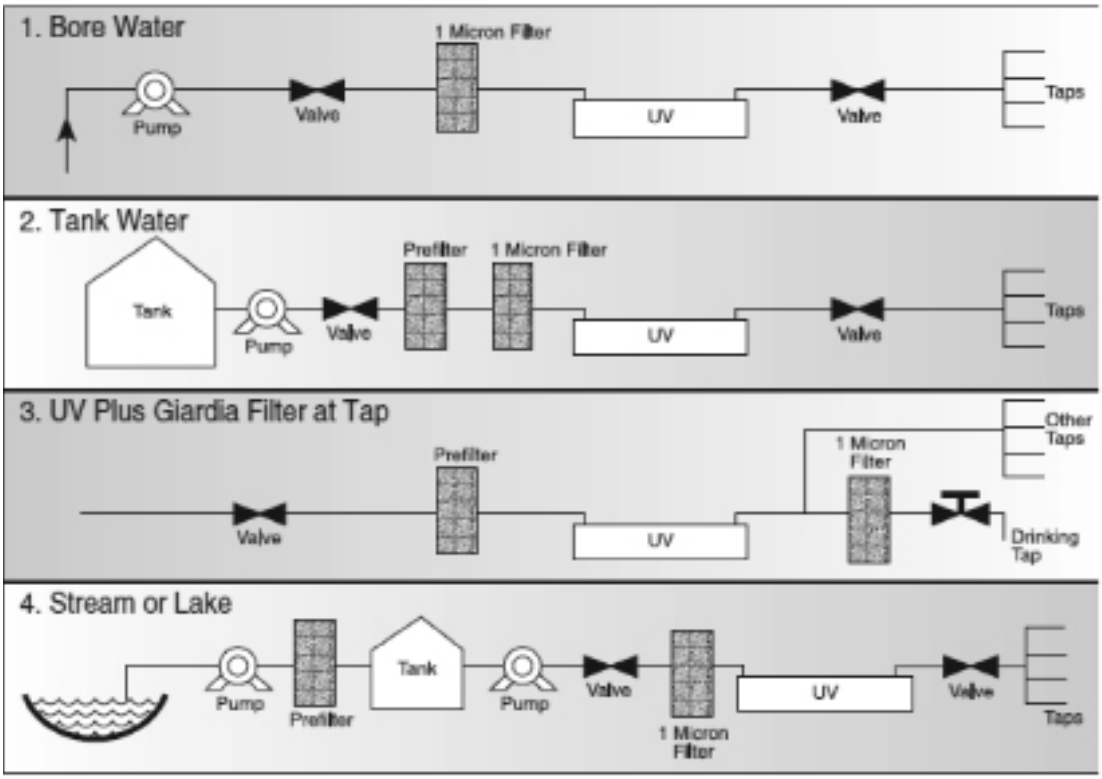
General

Ultra Violet Light (UV) is commonly used for water disinfection on a wide range of water sources by many local councils, the food, dairy and brewing industries and by thousands of private consumers to ensure their water is safe to drink.

The Microlene Steriflo UV sterilisation systems are an effective and economical means of controlling harmful bacteria and viruses for domestic and commercial applications.

Please consult Davey for the appropriate size system to meet your application.

Typical Applications



NOTE: Because the Microlene Steriflo controller is controlling a direct health risk to people, it is essential that the installation, operation and maintenance be thoroughly understood and procedures followed without fail. Do not bypass the UV Chamber - EVER!

SAFETY WARNING – This control system contains dangerous voltages and should not be opened or connected by un-authorised personnel. DO NOT look directly at UV light when servicing a Steriflo UV Steriliser.

CAUTION
UV LIGHT
DO NOT LOOK DIRECTLY AT LIGHT

In accordance with AS/NZS60335.2.41 we are obliged to inform you that this device is not to be used by children or infirm persons and must not be used as a toy by children.

SYSTEM COMPONENTS

Major components are described below.

Power Supply

For wall mounting unless otherwise specified.
Contains circuit board, alarm and power supply ballasts for the lamps.

Power on – indicated by illumination of the orange LED.

System on/off – use wall switch. Allow 3 minute lamp warm up time for adequate effectiveness. Build in a delay around any automatic switching to avoid rapid on/off switching. Switching intervals of less than 30 minutes should be avoided.

Alarm ON – red alarm LED illuminated continuously by test above or by alarm condition and buzzer sounds, indicates either lamp failure or low UV intensity. Alarm contacts change state.

Lamp change alarm – red light flashes rapidly and buzzer sounds intermittently after a years use. Reset when new lamps are fitted.

Ballast – high efficiency, high power factor type.

Circuit board – monitors lamp operation, has circuit to time a year's actual lamp running time.

Treatment Chamber

Normally mounted horizontally.

Lamp end cap – houses lamp power connections, should not be opened when lamps are lit except with eye protection.



DANGER – UV LIGHT AND HIGH VOLTAGE PRESENT



Water chamber – 316 stainless steel, houses all other chamber parts, CIP compatible to 100°C.

Lamp – Germicidal type. UV is harmful to the eyes therefore do not look directly at the burning lamp except through glass inspection port or with suitable safety glasses.

Quartz sleeve – Protects the lamp from water, and requires cleaning at intervals. Cleaning frequency is determined by sensor reading or by inspection. Will be infrequent in clean water. Sleeves should be cleaned (Inside and out) by hand annually.

Inspection port – Used to see if lamps are running and to inspect cleanliness of quartz sleeves. The viewing glass supplied is safe to look through without eye protection.

UNDERSTANDING HOW THE SYSTEM WORKS

The Microlene Steriflo Controller monitors the function of UV lamps (Tubes) in the Steriflo chamber.

These systems are NOT suited for dirty turbid water. It works best in clean water.

The Microlene Steriflo does not filter water; it sanitises clear water to reduce or eliminate biological heath risks in water. Laboratory testing of the treated water is the only way to prove that the system is suitably sanitising the water supply.

The principle of UV treatment of water is that UV light will deactivate many bacteria and other organisms in water. Common applications include drinking water treatment and use in, fountains and reclaimed water for parks and garden watering where using untreated water may present a health risk. It is also useful to deactivate waterborne algae to clear ponds and aquariums of algal blooms.

UV light is harmful to humans and as such the UV lamps should not be turned on and viewed with the naked eye for any reason. Exposure to UV light is painless so don't be fooled by this that no harm is occurring. DO NOT expose yourself to UV light.



When the UV lamps are installed in the Microlene Steriflo chamber it is safe to view the light through the viewing port. Never replace this glass with a non genuine glass. Only replace with a Davey supplied glass.

The Microlene Steriflo is an ultra violet light water disinfection system making use of high intensity UV light to deactivate micro-organisms using UV lamps housed in a pressurised stainless steel chamber. Power supplies and controls are housed in a separate cabinet. X2 models have two high output lamps (X4 have 4 etc.) powered by an electronic ballast which maximises the electrical efficiency of the system.

Designs can include variations in the number of UV lamps (2,4,6,8,or 12) depending on the supply water quality and output quantity and quality requirements.

The controller must be configured to tell it how many UV lamps there are so that it will monitor each one. A correctly configured controller will monitor the following:

- The number of UV lamps
- Failure of UV lamps (Will reduce effectiveness of water treatment)
- Overheating of the UV lamps (Shortens tube life).
- Relative UV light intensity (Intensity of UV light will diminish over time)
- The operating hours of each tube (UV lamps has a nominal operating life after which they should be replaced
- UV lamp starts (Lamp life is reduced by frequent starting)
- Time since last clean
- Temperature UV sensors are functioning properly.

This is not an exhaustive list but illustrates the importance of checking the configuration of your controller to match your setup.

Alarms will then be possible for:

- Lamp fail to start
- Lamps failure
- Lamps low intensity output
- Lamps overheating (The alarm set points high/low need to be configured).

The UV lamps generate heat and the chamber will increase in temperature when there is reduced or no flow. Therefore its best not to run the UV lamps too long in a "No-Flow" condition as this reduces the life of UV lamps (unless a "DUMP/RECIRC" valve is fitted).

ELECTRICAL

Power: Use a 10A switched socket. An earth leakage circuit breaker (RCD) socket is recommended.

Lamp cables: The connection of the power supply to the lamps should be made with the lead provided.

Alarm contacts in the power supply box can be connected to activate a remote via an optional built in alarm delay timer. The contacts are volt free and are rated 5A at 230V.

N/O, N/C and common contacts are present. When shutdown the contacts are in the alarm position.

Run contacts (optional) indicate the unit is operating, the contacts will open on shutdown or power failure, use as a separate major alarm indication.

Fuse externally with slow blow fuse. Rate fuse at 5A.
Lamp operating Voltage: 100 VAC
Lamp current: 850mA

INSTALLATION NOTES

UV sterilisers are designed for installation horizontally. Install so that the chamber remains full of water in no flow conditions. A height 1-1.5m from the floor is recommended for convenient servicing. The control cabinet is normally mounted on a wall above the UV chamber. The control cabinet should be under cover; a small canopy is sufficient. Five meters of cable is provided between control cabinet and treatment chamber.

Treatment chamber

1. Ensure the treatment chamber is mounted so that the inlet is below the chamber, and the outlet above.

Leave enough space to remove lamp from end cap, one chamber length is sufficient. Leave at least 300mm access space at the other end. Support the chamber on brackets provided. Do not use the chamber to support pipework or use the pipework to support the chamber.

2. Bolt the chamber to a secure surface or frame. Ensure you have sufficient space for access and removal lamps, sleeves, sensors and drains. Earth chamber electrically, using the bolt on the end cable bracket or by using the mounting bracket bolts.
3. If mounting against a wall, leave enough space to inspect the viewing port. Installation of a chamber drain and air bleed valve is recommended. When installing a drain or sampling valves be sure to leave space to operate them.
4. Gaskets should be non-fibrous e.g. Neoprene or Silicone.
5. Do not connect the inlet/outlet of the steriliser directly to PVC pipework. UV resistant material such as stainless steel or ABS must be used in a 90° bend or 1 metre straight pipe.

WARNING – UV DEGRADES MANY PLASTICS, PARTICULARLY PVC.

6. Bolts used for flanges or mounting should be stainless steel.
7. Locate the UV unit securely in an accessible location free of vibration and at a convenient working height for future inspection and maintenance.
8. Also ensure installation is such that the UV unit stays full of water and there is no water hammer (e.g. no rapid acting valves).
9. Do not locate unit where a water leak would cause damage.
10. Install a sample point for treated water if monitoring is required.
11. If treated water goes directly into a food product fit a sanitary strainer downstream.
12. Avoid rapid on/off switching, the UV unit can be left on with no flow for extended periods without damage, however the water will get warm.
13. Always have spare quartz sleeves and lamps available to ensure your unit can remain in service.

SETTING UP FOR FIRST TIME USE

Lamp installation:

The Microlene Steriflo chamber arrives with the quartz sleeves in place, but the lamps need to be fitted.

1. Remove the dome nuts and washers to free the end cap from the chamber.
2. Gently take the end cap off. Keep it close to the chamber so that the earth wire is not damaged.
3. Carefully slide the lamps into the (already fitted) quartz sleeves.
4. Connect the lamp to the mating plug. Ensure the corresponding position and plug are connected correctly.
5. Refit the end cap. Take care that all of the wires are securely inside.
6. Refit the washers and dome nuts.

Checking connections

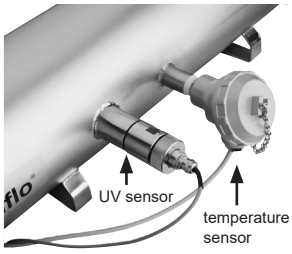


7. Plug in the Microlene Steriflo communication cable (left).
8. Plug in the 3 pin 240V power lead (right) into a general power outlet.

   A standard 10A 240V power point is suitable.
   No “hard wiring” is necessary.



Temperature and UV lamp sensors



9. Ensure the probes supplied with the Microlene Steriflo UV treatment chamber are correctly installed.

   The **lamp sensor** must have the correct o-ring fitted to avoid water leaks. The **temp sensor** will require plumbers tape each time it is re-fitted.

   The cable leads from both sensors must be fitted into the end of the chamber of the Steriflo.



Switching On Power

After the 3 pin power lead has been plugged into a standard 240 Volt power point the controller is switched on by lifting up the circuit breaker switch (O⟷I) to the “I” position.



Switching On Lamps

There are two ways to switch on the lamps.

1. Auto Start ON
2. Auto Start OFF

Auto Start ON will allow you to turn the lamps on via the enable button.

Auto Start OFF will allow the unit to be controlled by an external signal that will turn the lamps on (eg: pumps, valve)

To access this scroll to the Configure menu and press enter, than scroll down to Auto Start press enter and select one of the two options (ON or OFF)

Initialising (if required)

The system is now powered and the screen will initially display “Microlene Steriflo, Loading Data”. If this message continuously scrolls the controller will need to be **“Initialised”**
(first time use: normally this will be done in factory). **To initialise:**

1. Remove the front cover by prying off with a fine screwdriver (lever gently at the groove at the left end of the screen cover) and locate the **Reset button** to the left of the screen.
2. **Power off, press and hold the Reset button, Power on**.
3. Gently clip the screen cover back on. No screws required.

OPERATION

WARNING: DO NOT LOOK AT OPERATING LAMP WITH NAKED EYE EXCEPT THROUGH GLASS VIEWING PORT.

1. Switch on mains supply. Orange LED lights, UV lamps light, allow 3 minutes to reach operating power.
2. The Alarm function can be tested at any time by switching off the unit, unplugging a lamp and switching on again. After a power failure the unit will restart automatically.



Factory setting is Auto Start ON.

Factory setting is Auto Start ON.

MODES OF OPERATION



"Testing Mode" UV: X.X%	**(M)** - All status screens can show an (M) on the top line indicating that maintenance is required. (Action: Review maintenance requirement)
"Initialising" UV: X.X%	Shown after the test button is pressed, count down UV: X.X% (mm:ss) until test is finished.
"Idle" UV: X.X%	Briefly shown on startup (No Action Required) UV: X.X%
"Warming Up" UV: X.X%	Controller is idle and waiting for start command. UV: X.X%
"Running" UV: X.X%	Controller is waiting for tubes to warm up. UV: X.X% (mm:ss)
"Dumping" UV: X.X%	Controller is running UV lamps. In Normal mode tubes are on and water should be available.
"Running On" UV: X.X%	Controller is running UV lamps and dumping water to cool the chamber. UV: X.X%
"Paused" UV: X.X%	Controller has lost start command and is "Running On" waiting for the start commands to return. UV: X.X% (mm:ss)
"Faulted" UV: X.X%	Controller is paused. Controller has received a pause command from an external source. UV: X.X%

Descriptions of the current fault is displayed
(See page 11)

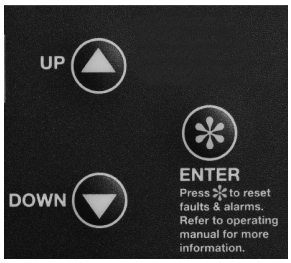
MENU TREE

Navigation through the MENU structure

Press the UP or DOWN key until the desired MENU is reached.
Press Enter ( ) to access the sub menu and press UP or DOWN to scroll through.
Scrolling DOWN or UP will return to the MAIN MENU.
When requested for a User Access Code, the factory default is 21.

Entering the Access Code (Factory default is 21)

To avoid accidental and unauthorised changes to settings an ACCESS CODE is required to make changes to values.



1. When prompted press the ( ) key to enter the access code.
2. Use the UP (▲) key to scroll up to 21 (use the DOWN (▼) key if you overshoot 21).

   Each press advances the code number by 1.

   The UP/DOWN keys can be held down for rapid scrolling.
3. Press the ( ) key to accept the code.

   When successful, the message **"Code Accepted, Thank You"** appears.

   After **25 minutes the access code expires** and will have to be re-entered.

   The access code can be changed in the configuration menu if necessary, however this is not recommended.

   If the access code has not been entered, a prompt will pop up allowing it to be entered.
   If the access code is not entered correctly, the system will disable entry into the sub menus and the use of enable keys.

MAIN MENU

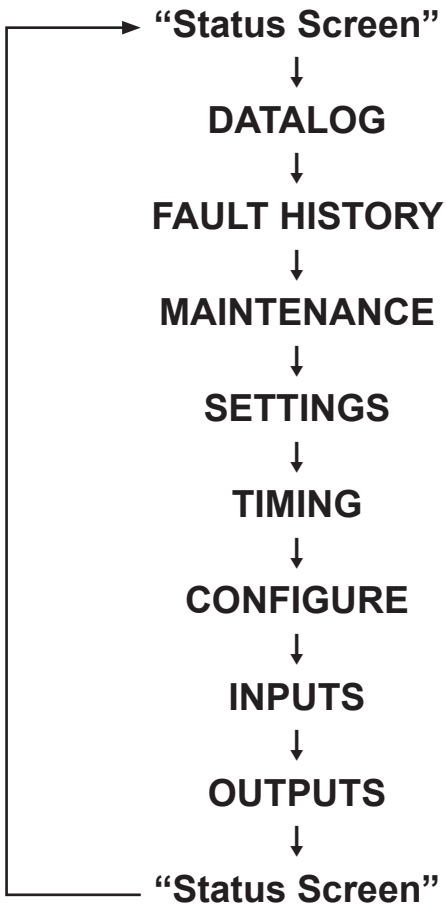
Use the UP/DOWN keys to scroll through the menus.

Press the ( ) key to enter a menu.

Use the UP/DOWN keys to scroll through the sub menus.

Press the ( ) key to enter values in a sub menu.

See following pages for sub menu structures.



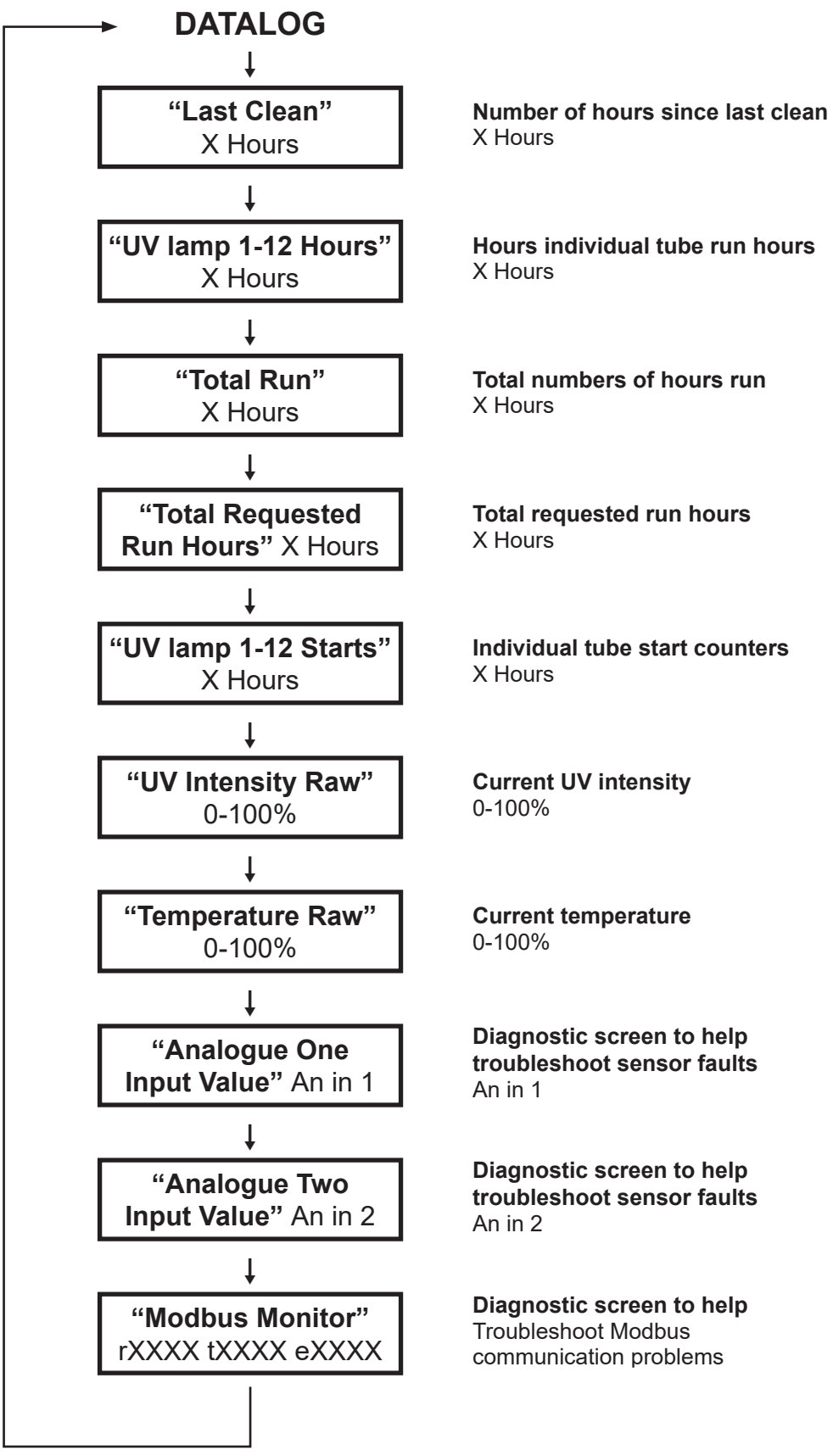
DATA LOG SUB MENU

Use the UP/DOWN keys to scroll through the sub menus.

Press the ( ) key to edit or enter a value.

Use the UP/DOWN keys to change a value.

Press the ( ) key to accept the new value.



CALIBRATING THE UV SENSOR

To avoid accidental and unauthorised changes to settings an ACCESS CODE is required.

1. When prompted press the ( ) key to enter the access code.
2. Use the UP (▲) key to scroll up to 50 (use the DOWN (▼) key if you have gone past 50).
   Note: to calibrate you need to use 50.

   Each press advances the code number by 1.

   The UP/DOWN keys can be held down for rapid scrolling.
3. Press the ( ) key to accept the code.

   When successful, the message **“Code Accepted, Thank You”** appears.

   After **25 minutes the access code expires** and will have to be re-entered.

   The access code can be changed in the configuration menu if necessary, however this is not recommended.

   If the access code has not been entered, a prompt will pop up allowing it to be entered.

   If the access code is not entered correctly, the system will disable entry into the sub menus and the use of enable keys.
4. Once the code has been entered scroll down the menu until ‘Configure’ appears then press ( ).
5. Continue to scroll down this menu until you reach UV Calibration and press ( ) you will hear a beep, this mean the sensor is now starting to recalibrate.
6. Return to the main menu (Idle) and press ‘Enable’ to start the unit. The sensor will now start to take the UV reading and continue to recalibrate until it reaches the maximum output.

   If the steps above have been correctly completed then the system should read UV 100%.

FAULTS



The existence of a fault is indicated by the red strobe on top off the panel.

The Red LED on the controller will be ON.

When a fault is indicated, **read the screen**.

To “clear” a fault press ( )

To “mute” an audible alarm press the **( ) twice**.



The faults and alerts are determined largely in response to settings entered in the configuration and timing menus. If alarms are occurring unnecessarily review these settings.

Some faults will stop the system, others will alert that action is required in the near future such as cleaning or lamp replacement.

A system failure may present a health risk.
Alarms must not be ignored or overridden.

Read the fault history to establish present and past faults

Examples:

- Low UV Fault – UV intensity measure has dropped below “UV Low Level” for “Low UV Delay” duration.
- High Temp Fault – Chamber temperature has exceeded “Max Temperature”.
- Tube Fault – Number of active lamps has dropped below “Minimum Tubes Threshold”.
- Sensor Fault – The UV intensity sensor and/or the temperature sensor has become faulty or disconnected.

NAVIGATING FAULT HISTORY

The fault log should be scrolled to examine the fault history. The following is an **example only**.

Use the UP/DOWN keys to scroll through the fault history.

FAULT HISTORY

↓

No Fault

↓

F1 Auto Reboot
01/01/2013 00.00

Controller integrity test
Date and time of auto reboot

↓

F2 Tube Fault
01/01/2013 00.00

A lamp fault has be detected
Date and time of lamp fault

↓

Sensor Fault

The UV intensity sensor and/or temperature sensor has become disconnected or faulty.

↓

Low UV Fault

UV intensity has fallen below "UV Low Level" for "Low UV Delay" duration.

↓

Hi Temp Fault

Chamber "Max Temperature" is exceeded.

↓

Tube Faults

The number of active lamps has dropped below "Minimum Tubes" threshold.

↓

Power Fault

Power failure and/or controller has been switched off. Indicates a period of no running.

↓

Power Glitch

A power quality problem has occurred.

↓

AnComms Fault

An internal fault has occurred.
Can be ignored.
Frequent faults?
Return to dealer for inspection.

↓

Fault 1-5

Fault N. No Fault Record
or FN Reason
XX/XX/XX XX:XX (YY/MM/DD HH:MM)
(Date and time of fault)

MAINTENANCE

Maintenance Status Screen

Tube Life Expired — Lists lamps that have reached their “Tube Life” setting.
X X X X X ...

Tube Problem — A list of lamps that have failed to start.
X X X X X ...

Tube Clean Required — UV intensity has dropped below the “Tube Clean Req” “UV Clean Level” threshold or the “Clean Interval” has been exceeded.

No Maintenance — No maintenance is required.

All Tubes Clean — Once quartz sleeves have been cleaned, “Press ( ) to confirm” Inform the controller by pressing the ( ) key.

Replace All Tubes — “All Tubes Replaced”
Once all lamps have been replaced, “Press ( ) to confirm”
Inform the controller by pressing the ( ) key on this menu item.

Replace 1-12 Tube — If one lamp has been replaced
“Tube XX Replaced” navigate to the appropriate “Tube XX”
Press ( ) to confirm and inform the controller by pressing the ( ) key on this menu item.

MAINTENANCE ALERTS

Maintenance alerts prompt inspection, cleaning and UV lamp replacement at end of recommended life span. These maintenance periods need to be configured from recommendations from the UV lamp manufacturer (lamp life) and from experience gained over time (cleaning frequency). The Davey supplied UV lamps have a life of 8000 hours.

TIMERS

To avoid nuisance alarms and alerts there are timers to allow the system to reach “normal state” before alarms occur. These times need to be configured to suit your installation.

e.g. Warm-up time, run-on time, low UV delay time etc. (see timing menu details on page 16)

MODES OF CONFIGURATION (DESIGN / SETUP)

Review your installation design (see below) .

Understanding your setup will help with understanding of configuration and interpretation of alerts and alarms.

	Modes of Operation	**Features**	**Considerations**
1	UV lamps “Always On” with dump valve (recirculation)	Fast start-up. Good for frequently changing demand, including zero demand. Reduced number of UV lamp restarts. Fewer restarts extends lamp life.	UV lamps are “Always On” which may mean changing UV lamps more often as recommended life time is reached faster than other setups.
2	Pump inhibit	The UV lamps are switched on when water is required. Minimises UV run hours. Less start-up delay than bypass setups.	Pumps will not operate until the UV lamps are ready; causing delay to water availability. Delay (no pump run) may be interpreted as a fault by uninformed operators. Greater complexity in wiring and commissioning.
3	Bypassed start-up (3 way valve)	UV lamps are switched on when water is required minimising UV run hours. A bypass valve prevents untreated water being supplied. System ready – bypass valve opens to deliver treated water.	Pump runs on demand without delay avoiding confusion about whether the system is ready or not (compared to above). Straight forward wiring and commissioning (compared to above). Longest delay on start-up.

SETTINGS

If the UV intensity drops below this level the system will shutdown.

“UV Low Level”
“X.X%”

Once the measured UV Intensity exceeds this level the system is ready. The tube UV output is deemed sufficient for treating water.

“UV Warm Level”
“X.X%”

If the UV intensity drops below this level the controller will indicate maintenance is required.

“UV Clean Level”
“X.X%”

***(M)** - All status screens can show an (M) on the top line too indicate that maintenance is required (Action: Review maintenance requirement).*

If the UV treatment chamber temperature exceeds this value then the system will be shutdown.

“Max Temperature”
“X.X%”

If the system is configured with a **“Dump Temperature”** dump valve to allow cold water recirculation and the UV treatment chamber temperature exceeds this value then the system will use the dump valve to cool the treatment chamber.

“Dump Temperature”
“X.X*C”

TIMING

The maximum amount of time the UV lamps should take before getting to the required UV output.

Warm Up Time
"X Seconds"

Occurs when system start signal is removed or the pause signal is asserted. The controller will continue running the tubes for this period of time, unless the maximum temperature is exceeded.

Run On Time
"X Seconds"

Identifies how long the UV Intensity must be below "UV Low Level" for before causing a shutdown fault.

Low UV Delay
"X Seconds"

Minimum dump duration
When the temperature in the treatment chamber exceeds "dump temperature", the dump valve will activated and thetemperature will start reducing.
When the temperature is below the "dump temperature" the dump valve will continue dumping until this timer has expired.

Dump Duration
"X Seconds"

This setting allows the user to enter a "Clean Interval" which is an estimated time between UV lamp sleeve cleans.

Clean Interval
"X Hrs"

This setting allows the user to enter an estimated tube life.

Tube Life
"X Hrs"

CONFIGURE MENU

Specifies the number of UV lamps in the controller.This option may modify input settings; if the number of tubes is changed please re-check the inputs.

Number of Tube/s
"X"

Set Time/Date.
This sets the current time and date.

Set Time/Date
"XX:XX XXXX/XX/XX"

The minimum number UV lamps that must be operating. If the number of UV lamps drops below this number a shutdown fault will occur.

Minimum Tube/s
"X"

This setting causes the controller to "Auto Start" without an external start signal being present.

Auto Start
"Off"

Configures whether the "Audible Alarm" is active for faults.

Audible Alarm
"Yes"

Allows the operator to reset the UV lamp maximum intensity to the current UV intensity. (Refer to page 12 for more information)

UV Calibration
"X.XX%"

Allows the operator to disable "Validate Sensors"

Validate Sensors
"Yes"

Changes the Access Code. Preset is 21

User Access Code
"HIDDEN"

Option List: Modbus 2400", "Modbus 4800", "Modbus 9600", "Modbus 19.2k", "Modbus 38.4k", "Modbus 57.6k", "Modbus 115.2k"

Serial Comms
"Modbus 9600"

INPUTS

Inputs used for detecting UV lamp ballast faults.

“UV1 Fault”
“UV1 – UV7 Fault”

These inputs are locked and preset to the design configuration.

“UV2 Fault”
“UV2 – UV8 Fault”

If there are less than 7 lamps, options will be shown.

“UV3 Fault”
“UV3 – UV9 Fault”

If there are less than 7 lamps, options will be shown.

“UV4 Fault”
“UV4 – UV10 Fault”

If there are less than 7 lamps, options will be shown.

“UV5 Fault”
“UV5 – UV11 Fault”

If there are less than 7 lamps, options will be shown.

“UV6 Fault”
“UV6 – UV12 Fault”

When 7 or more lamps are configured additional options will become visible.

The “Start” input causes the controller to run the lamps until either the start signal is removed or the pause signal is present.

“Start”

The “Pause” input causes the controller to stop running the lamps and stops the controller from starting again until the signal is removed. Pause overrides the start input.

“Pause”

“X” where X is Inputs Options or “Input N (INV)”. Lines with inverted on the top line will invert the sense of the input function. Inputs can be inverted by pressing the up and down buttons together briefly while editing.

“Input Assignment”
“Input N”

OUTPUTS

Outputs Submenu

Output Options

Used to run the first bank of UV lamps 1-6	**“UV Run A”**
Used to run the second bank of UV lamps 7-12	**“UV Run B”**
Bypass valve output, this output closes the contact when the controller is warming up.	**“Bypass”**
Dump valve output, this output closes the contact when the controller needs lower the temperature in the treatment chamber.	**“Dump Valve”**
Fault output contact closes when the system is in fault.	**“Fault”**
Pump inhibit opens contact when controller is in the warm up phase.	**“Pump Inhibit”**
UV Ready output closes when the lamps are on and warmed up.	**“UV Ready”**
The maintenance output closes when the controller has detected maintenance is required.	**“Maintenance”**

Outputs 1 and 2 Locked to UV Run A and UV Run B
Output Assignment 3-5
Relay N
X where X is Output Options

SERVICE – CLEANING AND LAMP REPLACEMENT

Lamp replacement and cleaning of quartz components

1. Turn off water flow to ensure that untreated water does not pass through the system.
2. Switch off the steriliser at the mains power supply.
3. Remove end cap after undoing dome nuts.
4. Lamp connectors are now exposed, disconnect and withdraw lamps. Take care not to damage the earth wire.



CAUTION:
MAY BE HOT. DO NOT TOUCH QUARTZ BODY OF LAMP EXCEPT WITH CLEAN CLOTH. HANDLE BY END PIECES.

5. Reverse procedure with new lamp.

Quartz Sleeve Removal

1. Switch off the steriliser at the mains power supply.
2. Turn off water, drain chamber and remove lamps as above.
3. Undo sleeve retaining caps, one at each end of chamber. The caps are retained with 4 socket head screws. Remove o-rings (inspect to check condition). Retain the white pressure ring inside the power end cap.

Do not reassemble without ring

To loosen o-rings twist sleeve at the opposite end to the power connections (closed end caps) and then push in 2-3mm to break seal.

4. Withdraw quartz sleeve, CARE – do not allow closed end of sleeve to drop into chamber - **a dowel rod inserted into the sleeve is essential when dismantling and when reassembling to guide sleeve into position**.
5. Clean with CLR on a clean cloth. Methylated spirits is suitable for removing grease from handling sleeves and lamps. When reinserting sleeve use silicone spray on o-rings to ensure ease of removal next time. Handle the quartz sleeve with care and cloth gloves if possible.
6. When reassembling insert sleeve using dowel. Replace the o-rings at each end and push into recess.

NOTE: IT WILL BE APPROPRIATE AT THIS STAGE TO CHECK INSIDE THE CHAMBER FOR DEPOSITS AND HOSE OUT ANY SEDIMENT.

Fit cap at power end of quartz sleeve first.

Before tightening push the sleeve in until 5-10mm is left exposed outside chamber, then tighten the cap. Following this procedure ensures that the end of the sleeve cannot be damaged by the cap as it is tightened as there is plenty of room inside the cap at the other end.



NOTE: DO NOT FULLY TIGHTEN END-CAP SCREWS – FINGER TIGHT PLUS HALF A TURN IS SATISFACTORY.

Chamber Cleaning

The chamber can be cleaned with most solvents and cleaning agents, except hydrochloric acid which is suitable for quartz cleaning only.

Non Routine Procedures

1. Internal quartz sleeve cleaning – to remove dirt in the quartz sleeves the inside of the sleeves should be cleaned using methylated spirits and a bottle brush or rag on the end of a dowel rod.
2. Extended shut down – flush unit with fresh water and drain. If used with sea water or sewage rinse with fresh water.

RECOMMENDED SPARES

The following should be held as spares as a minimum:

Spare lamp, quartz sleeve, and 4 sleeve o-rings. Refer to table below for relevant part numbers.

	ACX2	ALX units
Lamp	GPH840N2/S	GIA1554NW
Sleeve	TT900	TT1575
Ballast	S492-FG	S492-FG
Circuit board	S542	S542
Quartz sleeve o-ring	S24x3S70	S24x3S70
Sensor port seal ring	S385	S385
View port o-ring	S112S70	S112S70
View port glass window	S122	S122
View port packer	S126	S126
Quartz sleeve pressure ring	S113	S113
Lamp connector	S114/1	S114/1

CHEMICAL CLEANING

If the steriliser is being used on a duty where fouling is likely, for example if the water contains iron, cleaning of the quartz sleeves may be frequent and time consuming.

Therefore we recommend the use of an in-situ chemical cleaning system. This involves the use of a chemical cleaning agent such as a mild acid, such as 5% citric sulphamic acid or for severe mineral deposits, dilute sulphuric acid.



CAUTION: DO NOT USE HYDROCHLORIC ACID.

Cleaning will normally involve turning off the water flow and the steriliser, isolating the steriliser and then recirculating the acid for 30 minutes. Mild acids such as citric can be left to soak indefinitely. Cleanliness can be checked by draining the acid and refilling the steriliser with water and turning the steriliser back on; the monitor reading will verify that the clean has been effective.



CAUTION: GOGGLES AND GLOVES SHOULD BE WORN EVEN WHEN HANDLING MILD ACIDS.

Notes

1. The acid can be used several times and so provision should be made to return to its container after use.

2. The acid can normally be disposed of into a sewer provided it is neutralised first.

Check with the local authority to determine the allowed pH range. The pH should be measured with a meter or indicator paper.

Alternatively a soak hole can be used.

Davey Repair or Replacement Warranty

In the unlikely event in Australia or New Zealand that this Davey product develops any malfunction within one year of the date of original purchase due to faulty materials or manufacture, Davey will at
our option repair or replace it for you free of charge, subject to the conditions below.
Should you experience any difficulties with your Davey product, we suggest in the first instance that
you contact the Davey Dealer from which you purchased the Davey product. Alternatively you can phone our Customer Service line on 1300 232 839 in Australia, or 0800 654 333 in New Zealand, or send a written letter to Davey at the address listed below. On receipt of your claim, Davey will seek to resolve your difficulties or, if the product is faulty or defective, advise you on how to have your Davey product repaired, obtain a replacement or a refund.
Your Davey One Year Guarantee naturally does not cover normal wear or tear, replacement of product consumables (i.e. mechanical seals, bearings or capacitors), loss or damage resulting from misuse or negligent handling, improper use for which the product was not designed or advertised, failure to properly follow the provided installation and operating instructions, failure to carry out maintenance, corrosive or abrasive water or other liquid, lightning or high voltage spikes, or unauthorized persons attempting repairs. Where applicable, your Davey product must only be connected to the voltage shown on the nameplate.
Your Davey One Year Guarantee does not cover freight or any other costs incurred in making a claim. Please retain your receipt as proof of purchase; you MUST provide evidence of the date of original purchase when claiming under the Davey One Year Guarantee.
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In Australia, you are entitled to a replacement or refund for a major failure and for 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.
Should your Davey product require repair or service after the guarantee period; contact your nearest Davey Dealer or phone the Davey Support Centre on the number listed below.
For a complete list of Davey Dealers visit our website (davey.com.au) or call:

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*** Installation and operating instructions are included with the product when purchased new. They may also be found at davey.com.au**

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