

Instruction Manual v.1.1

Cooling Tower Controllers

ULTIMA

Advanced Water Treatment Controllers



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Warnings

Refer to AS/NZS 3000 WIRING RULES when installing electrical equipment on and around the cooling towers and HVAC equipment. The power cover is to be removed by Aquarius Technologies Pty Ltd, an authorized service agent or a licensed electrician only, and must be replaced before the controller is connected to the power supply. Do not open the controller enclosure except as required for maintenance purposes. Once maintenance is complete, the enclosure is to be closed and resealed. If the supply cord is damaged, it shall be replaced by Aquarius Technologies Pty Ltd or an authorized service agent to avoid a hazard. This appliance is not intended for use by young children or infirm persons unless they have been adequately supervised by a responsible person to ensure they can use the appliance safely. Young children should be supervised to ensure they do not play with the appliance.



This marking indicates that this product should not be disposed of with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

Chemicals used as part of the treatment program may be hazardous. Refer to the Material Safety Data Sheets provided by your chemical supplier and ensure all personnel involved are aware of the handling and safety procedures.

It is a requirement to provide protection for accidental spills of chemicals and that includes any leaks that can develop from pump pressure lines. Please read and understand all safety warnings on chemical containers before servicing any dosing equipment. Some chemicals will damage materials used in construction of buildings, particularly roofing. Never assume that the equipment will not leak, under certain conditions that will occur. It is the responsibility of the installer to ensure that such events do not create damage that should have been avoided by correct site selection and the provision of adequate bunding at the time of installation.

Wear as a minimum - safety goggles and gloves when servicing the dosing equipment. Do not mix concentrated acids and oxidising agents as explosion, and/or toxic and lethal gas may be evolved, and/or fire result. Keep all chemical containers sealed and free from contamination.

Bleed solenoid and BCD solenoid leads should not be left unattended due to the risk of high voltage hazards. All solenoids must be connected to their leads before turning the controller ON. It is a full responsibility of the installer and user to ensure the leads are not exposed to the open air or water ingress.

INTRODUCTION

Ultima advanced cooling tower controllers model incorporates the following key features:

- TDS/Conductivity Control
- Inhibitor timer Control
- Oxidizing biocide Control through ORP
- Non-Oxidizing biocide control through timers
- Single and Dual pH Control
- Dispersant dosing Control
- Temperature Monitoring
- Comprehensive timers to regulate
- On Board Data logging
- Accessory timers for the better performance of each individual timer
- High and Low alarms for pH, ORP & TDS
- Extensive Internet Communication choice (Modem, Wi-Fi, Ethernet)

Where to find the serial number



Serial Identification Label

All Aquarius Technologies Controllers are manufactured with a Serial Identification Label (SIL). This will be affixed to the wall of the controller, on the outside face on the right side.

The label is the best reference for making inquiries for service or Technical Assistance.

Any controller that does not show evidence of the SIL may have the warranty voided.

Key data being:

Model: e.g. ULTIMA. This is actual Controller model and indicates the configuration.

Build: e.g. Mar-15. Would indicate this controller was manufactured in March 2015

Serial No: e.g. 1503ULT000694 is the specific serial number for this Controller

Installation Guidelines

Please refer to this section for typical installation guidelines, typical layout and Housing Installation diagrams.

Before you start

Select a suitable location for installation - preferably in close proximity to the main system, protected from the public and environmental factors such as direct sunlight. *The suitable location must not be on top of a source producing large amounts of heat (e.g. metal fence or shed) and ideally not be in direct sunlight.* The Ultima LCD screen must be covered by the flap lid for UV protection on all outdoor installation. A wall area of approx. 0.75 m. wide by 1.0 m. high is ideal for mounting your controller. Mount the unit at eye-level to allow good navigation of the controller. A minimum floor area of approx. 1.5 m x 0.6 m below the controller is required for the chemical tanks. This will vary according to the number and type of chemicals being used for dosing.

It is important to consider environmental elements when installing. It is a requirement to provide protection for accidental spills of chemicals and that includes any leaks that can develop from pump pressure lines. Some chemicals will damage materials used in construction of buildings, particularly roofing. Never assume that the equipment will not leak, under certain conditions that will occur. *It is the responsibility of the installer to ensure that such events do not create damage that should have been avoided by correct site selection and the provision of adequate bunding at the time of installation.*

System requirements

There are several minimum requirements that should be established BEFORE the controller is installed;

- Minimum 20 mm (3/4) take-off and in line to supply sample water to the system,
- Minimum 12 litres/minute supply flow to ensure proper operation of sample readings, dosage and bleed off rates.
- Adequate bunding is provided for the system and chemical drums to prevent spills causing damage.
- Availability of approved connection to power. A 'clean' 220 - 250 VAC 50 Hz @10 amps supply (some options may need more than one outlet, or increased current capability).

Users of the Ultima are prevented from contact with hazardous voltages by the protection cover (Picture 1 and Picture 2). *Only a certified electrician or Aquarius Approved Service Technician may remove the protection cover to access the hazardous voltage area. It is required to disconnect the controller from the supply before removing the cover or performing any electrical work, including unplugging and/or replacing all circuit boards.*



Picture 1. Protection cover



Picture 2. Warning on the protection cover

To install

Unpack the equipment and check for any damage. Ensure all parts are accounted for.

Assemble the inlet and outlet PVC valves on the sensor manifold. Remove the protective cap and fit the pH/ORP probe and other probes into the manifold.

Install the BLEED solenoid on the manifold and wire the power cable supplied from ULTIMA. **(Never leave the bleed solenoid cable unplugged when turning ULTIMA ON)**

Connect a 20 mm line from the circulating pump discharge line, or system common discharge header, to the inlet of the manifold. Connect a return line from the manifold outlet valve, preferably in PVC pipe to the pump suction or common suction header or to the tower basin.

If installing a BCD Feeder, assemble the BCD feeder as per its separate instructions and floor mount in the vicinity of the system. Plumb from the BCD control solenoid to the inlet of the BCD feeder and from feeder to the system.

Install the BCD solenoid as required and wire its power cable before plugging into the sockets supplied inside the controller box. **(Never leave the BCD solenoid cable unplugged when turning ULTIMA ON)**

Install chemical tanks as required, and ensure each dose pump's discharge tubing is connected to the manifold injection points provided.

Run a flow of water through the system under normal operating pressures. Check for, and repair any leaks. The Ultima Controller is now ready for use.

Liaise with your chemical specialist for advice regarding any bunding requirements, floor drainage requirements and fresh water supply in the vicinity of chemical tanks. In addition check on local authority regulations for discharge of trade waste, chemical storage and hazards control etc.

Maintenance and Care of Sensors

Foulants can lead to inaccurate sensor readings. Sensors should be cleaned and calibrated regularly using the following procedures.

Cleaning of Flow/Conductivity/Temp Sensor

Isolate the flow to the manifold. Remove the locking nut from the Flow/Conductivity/Temp sensor.

Abrade the sensor surface with 300–400 grade wet-and-dry paper until the surface is clean, the two carbon electrode surfaces are clearly visible, and the surface wets out freely.

Ensure flow paddle is free from debris. Rinse the sensor in fresh water and replace it in the manifold.

Cleaning of pH/ORP sensor

Isolate flow to the manifold. Remove the sensors from the manifold by loosening the lock nut and withdrawing the sensor from the manifold.

Rinse the sensors in fresh tap water and remove any visible fouling. This should be done carefully by lightly scrubbing with a soft tooth brush or similar.

Place the sensors in the Electrode Cleaner solution (AS9500) for about 5 minutes to completely dissolve any trace of inorganic foulants.

Remove and rinse thoroughly in fresh water before replacing it in the manifold. Proceed to calibration or verification of sensors as outlined in the commissioning section.

Accessories and Spare Parts

Reagents

AS1413 -1413 µcm conductivity solution

AS7004 - pH 4 buffer solution

AS7007 - pH 7 buffer solution

AS5475 - 475 mV ORP solution

AS4250 - pH 4.01/250 mV combo solution

Sensors

PR_FCT – Combination Conductivity, Flow and Temperature Sensor.

PR_pHRG – Combination pH, ORP and Ground reference Sensor

Peristaltic Pumps

AP_PERI_S_KIT – AP PERI SERVICE KIT (Maximum service interval - 12 months). Included in this Kit are the following

- AP_TUBE4824 (1)
- AP_INJECT (1)
- TUBESUCTION (2 mt)
- TUBEDISCHARGE (2 mt)

AP_PERI_O_KIT – AP PERI OVERHAUL KIT (Maximum service interval - 2 years)

Included in this Kit are the following

- AP_TUBE4824 (1)
- AP_INJECT (1)
- AP_ROLLBLOCK (1)
- AP_DWEIGHT (1)
- AP_LID (1)
- TUBESUCTION (2 mt)
- TUBEDISCHARGE (2 mt)

Routine Testing

The use of an Aquarius control system will automatically vary the dosages and maintain good conductivity, ORP and pH control, even where there are wide fluctuations in system load or demand. The principles of “Best Practice” and “Duty of Care” that are the responsibility of the system owner dictate that all systems should be routinely serviced and tested chemically and the results logged.

Regular Inspections and Maintenance

For optimum results and continued accuracy, the complete operation of the controller system should be verified at least on a monthly service basis.

All sensors should be inspected, cleaned and calibrated as necessary every month.

All sensors age with time and temperature, and have a typical life span of 12-36 months depending on the application in which they are operating and should be replaced accordingly.

Where fitted, flow sensors and wire strainers should be checked for correct operation and cleaned of any debris every month so they work efficiently.

Injection non-return valves and pumps should be cleaned and checked at least monthly.

Sodium Hypochlorite being highly alkaline may lead to scale formation on its dose injector and this may require acid cleaning on a frequent basis.

On the peristaltic dose pumps, the squeeze tubes and roller block should be checked at least annually and should be replaced every 12-24 months.

More regular maintenance may be required for the larger 3.0 l/hr pumps, due to increased pumping rates.

Chemical suction and discharge tubes should be inspected monthly and replaced as necessary

Maintenance schedule	1 month	3 months	6 months	12 months
Clean and Calibrate FCT Probe	√			
Verify Flow ON/OFF	√			
Clean and Calibrate FAC Probe	√			
Clean pH/ORP Probe	√			
Verify / Calibrate ORP	√			
Test Outputs	√			
Test Pumps/Solenoid Operation	√			
Calibrate pH Probe	√			
Check/Clean Injectors	√			
Inspect Suction/Discharge Tubing	√			
Check/Clean Solenoids		√		
Peri. Pump - AP Service Kit			√	
Peri. Pump - AP Overhaul Kit				√

Electrical Wiring

Refer to AS/NZS 3000 WIRING RULES when installing electrical equipment in and around water areas.

The hazardous voltage area of this controller is under the protection cover (see Pictures 1 and 2). Only Safety Extra Low Voltage (SELV) is supplied to the accessible circuit boards inside the enclosure. Sensors may be maintained while the controller is powered.

CAUTION: *Only a certified electrician or Aquarius Approved Service Technician may remove the protection cover to access the hazardous voltage area. It is required to disconnect the controller from the supply before removing the cover or performing any electrical work, including unplugging and/or replacing SELV circuit boards such as the Motherboard or Probeboard.*

Fuses are easily accessible:

Equipment fuse F1: Output fuse: 5A/250VAC 20 x 5mm

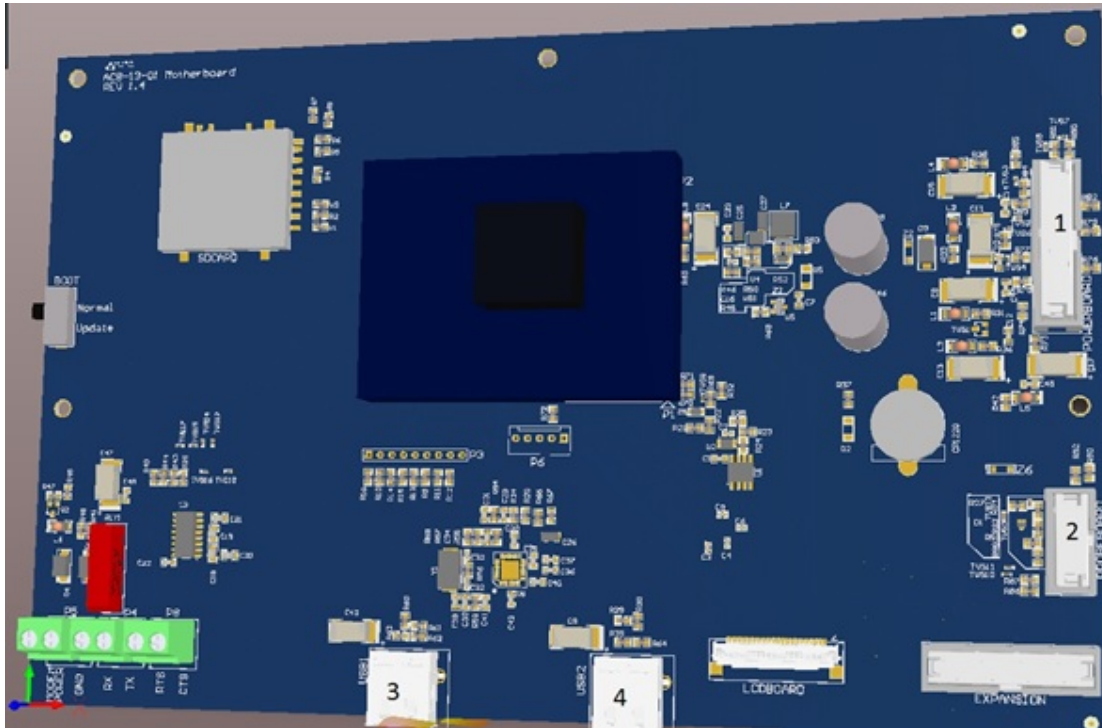
Relay fuse F2: - Only if additional relay for output 8 is installed.

Control fuse F3: 0.125A/250VAC Time-delay 20 x 5mm

Connections

The motherboard is located on the internal side of the front controller lid.

The diagrams below show the connections to the Ultima controller motherboard circuitry:



- 1 – Power cable connector
- 2 – Probe-board power cable connector
- 3 – USB connector
- 4 – USB connector

CAUTION: When front controller door is open it sits on two hinges on the left hand side of the controller. (Picture 3) Please take extra care when operating with an open front door. Do not push the front lid upwards without holding onto the door, as this could detach the door from the support hinges. Always close the front panel on completion of maintenance work and fasten screws.

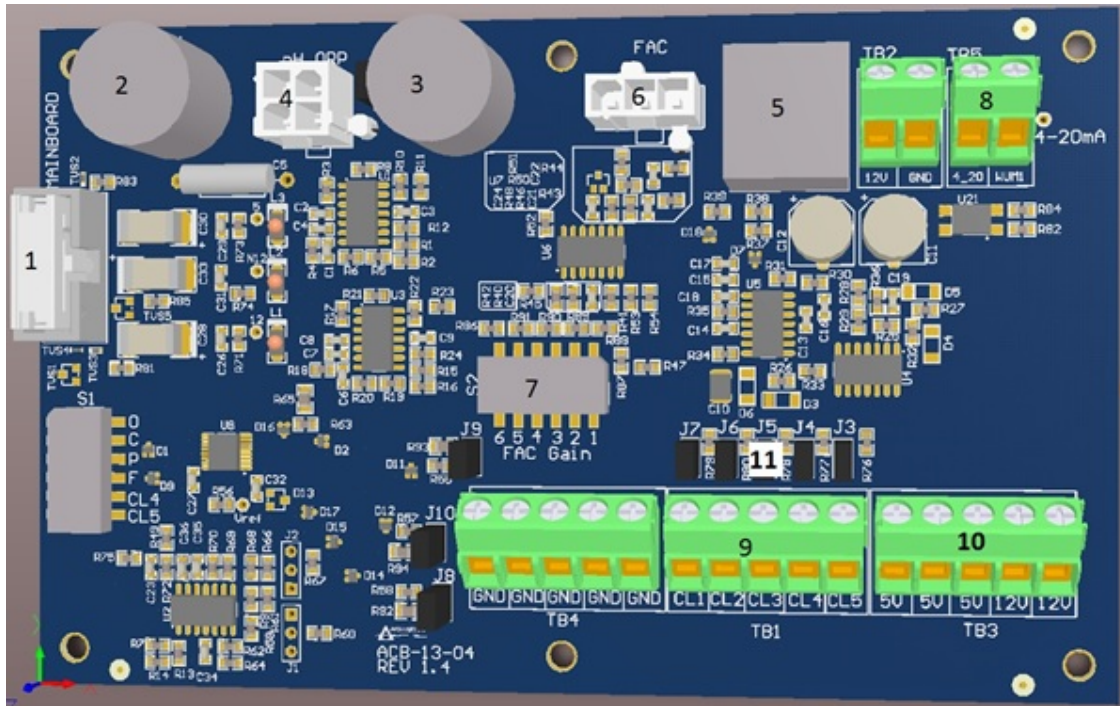
Note: Please ensure the O-ring is in good condition and seated properly within the groove.



Picture 3. Left – hand side support hinges

The Probe-board is located above the protection cover on the bottom left hand corner of the controller.

The diagrams below show the connections to the Ultima Probe-board circuitry:



- 1 – Power cable connector between Probe board and Motherboard
- 2 – BNC pH connector (if fitted)
- 3 – BNC ORP connector (if fitted)
- 4 – Combination Probe (PR_PHRG) connector
- 5 – FCT probe (PR_FCT) connector
- 6 – FAC probe connector
- 7 – Dip switches for FAC Probe Gain regulation
- 8 – 4-20mA connector and Water meter connector
- 9 – 5 x Analogue inputs
- 10 – 3 x 5V DC and 2 x 12V DC power supply connectors
- 11 – 5 x jumpers for tank alarm sensors connected to the analogue inputs

System configuration

The ULTIMA controller has a 7" touch screen and navigation is similar to that of any smart phone, PC monitor, GPRS navigator or other modern device. Operating the controller is done by touching the screen and navigating using your finger. The ULTIMA controller screen is covered with a protective film.

CAUTION: Do not operate the controller with dirty or wet fingers. Do not touch the controller screen with metal or sharp object. Always close the screen flap cover down on completion.

All Aquarius controllers come loaded with preset default values for all of the treatment program parameters. On start up the controller will operate according to those defaults. However, every application should have a planned treatment program developed. Decisions should be made on what values are most appropriate for ORP, pH, TDS/ Conductivity, Inhibitor, Secondary Biocide and Dispersant dosing requirements.

Once the customized program has been determined, it may be set in the Aquarius controller, as described in the following sections.

Turning the ULTIMA controller ON

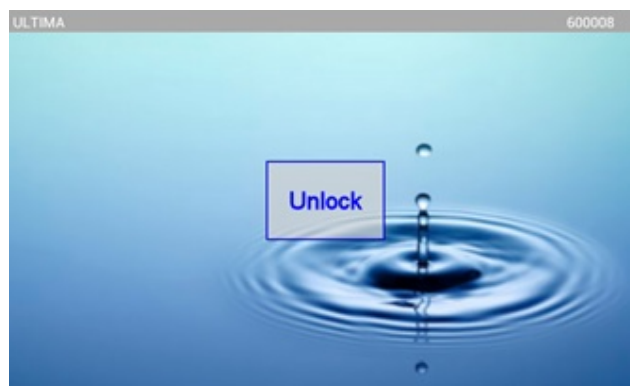
When you plug the controller into 240 VAC supply it turns ON. It takes about 30 seconds for the controller to open its program. During this time AQUARIUS animation logo will appear on the screen.

CAUTION:

All provided solenoid cables are wired to 240V electricity source and must not be left unattended when turning the controller ON

- Do not turn the controller ON until the bleed solenoid cable is wired to a proper solenoid
- Do not turn the controller ON until BCD solenoid cable is wired to a proper solenoid or it is unplugged from the controller (if BCD solenoid cable is included)

When the program is fully loaded the front lock screen will appear. (Picture 4) To start using the controller, press the UNLOCK.



Picture 4. UNLOCK Screen

Main Screen

The Main Screen display (Picture 5)



Picture 5. MAIN Screen

- Top bar with Connection Status, Date, Time, Flow ON/OFF parameters
- Menu with icons on the left side of the screen. Icons are SYSTEM, LOCK SCREEN and NEXT
- Six main parameters with Component information. Component information displayed is as follows: Name, Current Value and Set point. If the relay is ON, the POWER icon turns blue in the left top corner of each component box. If the Component is in LOCK OUT, a RED PADLOCK sign will be active on the left top corner. If the Component is in ALARM, the top part of the component box will flash RED. Some Component boxes display icons for easy identification of the Component.

The red light signal on the top right of the screen shows that at least one parameter is in alarm.

Setting System Preferences

To set system preferences press SYSTEM icon on the left-side Menu of main screen. The SYSTEM screen will appear (Picture 6). This is the original ANDROID screen. It displays the controller's details and user preferences.

The user can choose communication options to be used, depending on your hardware configuration: NONE, ETHERNET, WI-FI or MODEM by activating appropriate circles on the screen.



Picture 6. SYSTEM Screen

The left-side Menu has the following icon boxes: ADVANCED, SAVE, IMPORT/EXPORT, RETURN. There are a further two icon boxes on the bottom right hand corner of the SYSTEM SCREEN: RESTORE DEFAULTS and REBOOT.

ADVANCED icon is used for setting Date and Time, Language and Wi-Fi preferences. *Date and Time should only be adjusted if the controller is not connected to the server. Otherwise Date and Time settings should be made by changing the time zone of the controller via the webpage. The controller may need to reconnect to the server for the time zone change to take effect. If the date and time is changed through advanced settings, the screen lock may be automatically activated and "Exit" will have to be pressed to resume normal operation.*

SAVE icon is used to save preferences after editing.

IMPORT/EXPORT icon is used for downloading data and settings from the controller to USB drive or for uploading previously exported settings from a USB drive to the controller.

RESTORE DEFAULT icon is used for restoring all settings and preferences to factory settings.

REBOOT icon is used for restarting the controller without unplugging it from the 240 VAC power supply.

The SYSTEM SCREEN displays an option for a Screen Lock Password. If the checkbox next to it is ticked, a new checkbox SET PASSWORD will appear together with a Read Only Login checkbox. When this option is checked the controller screen can be unlocked in Read Only mode by pressing SKIP on the pop-up screen. This will give users access to the controller without the ability to change settings. Read Only users may calibrate the controller. If this option is not ticked, the user can unlock the controller ONLY by using the password.

To set up a password press SET PASSWORD. The pop-up screen will appear (Picture 7). Input 4 digits and repeat to confirm. To clear, press CLR button on the pop-up screen. If user does not wish to proceed, press CANCEL. If this is the case, the pop-up screen will disappear and the Screen Lock Password checkbox on the SYSTEM SCREEN will remain un-ticked. The same will occur if the user does not enter a matching 4 digit number when creating passwords.



Picture 7. SET PASSWORD Screen

Advanced Setting

When pressing the ADVANCED icon on the SYSTEM screen, an ADVANCED screen will appear (Picture 8). This screen has standard ANDROID options for setting Date and Time, Language and communication preferences. These preferences are to be set in accordance with standard procedures for ANDROID operating systems. Press EXIT on the top right hand side of the screen, when all preferences have been set.



Picture 8. ADVANCED Screen.

Importing/Exporting Settings and Exporting Data

When pressing IMPORT/EXPORT on the SYSTEM screen, the pop-up screen IMPORT/EXPORT will appear (Picture 9). Before Exporting/Importing, secure the front panel with one hand and insert the USB drive into one of the USB drive connectors on the Motherboard (refer to item 3 and 4 of the Motherboard circuitry diagram).

Note: It is recommended to use a USB cable extension to access the USB port from the glands on the controller to provide easy access.



Picture 9. IMPORT/EXPORT Screen

Once the Import or Export operation is complete, a confirmation message will appear. Press EJECT USB before Ejecting the USB drive from the USB drive connector on the Motherboard. To return to SYSTEM screen, press CLOSE.

Component settings

General layout:

On the main screen (Picture 5) touch the component which you would like to configure. Most component screens have a similar structure: the left-side menu, Current value and Output active/inactive icon, the performance Chart in the middle of screen and Settings values on the right-hand.

The following icons are situated on the left-side menu: SYSTEM, CALIBRATION, SAVE, RETURN.

SYSTEM icon is for System Configuration.

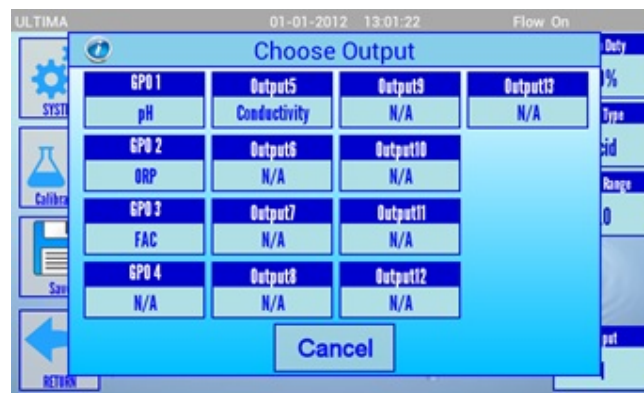
CALIBRATION icon allows the option of: QUICK and PRECISE calibration. Choose between QUICK calibration using a known pre-measured value and PRECISE calibration using calibration solutions. Follow the instructions on the screen to complete the calibration. It is recommended to perform PRECISE calibrations on commissioning, every month and when a new probe is installed.

Press the SAVE icon for saving new settings after editing. A pop-up screen with confirmation of savings of new settings will appear. New settings will also be saved when pressing RETURN icon and returning to the MAIN screen.

The performance Chart has historical values on the current date; week or month (Double click on chart area to load the desired component). Also shown on the graph are indications of dosing duty values for those periods.

OUTPUT: This allows you to CHOOSE OUTPUT screen (PICTURE 10). Press the chosen output to use that output instead of the currently assigned one if required.

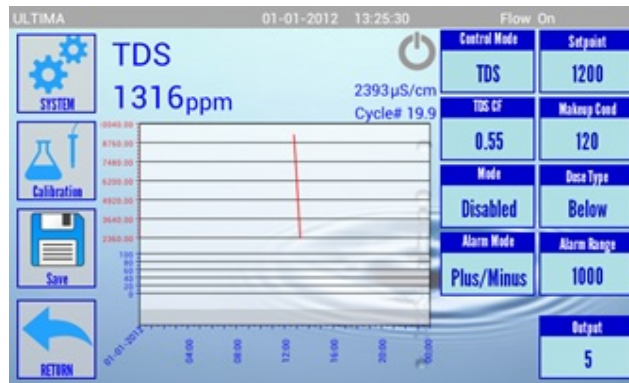
CAUTION: Use outputs 1 to 4 only as they are wired to the GPO plugs 1 to 4 labelled on the protection cover inside the controller (Refer to the Picture 1. Protection cover) Outputs 5-8 should be used only if they are wired according to the purchase order. Outputs 9 to 13 are low power (can switch up to 50V/0.5A/10W peak) signal relays for use with switching dosing pumps or similar applications.



Picture 10. Choose Output Screen

TDS/Conductivity Configuration

The TDS/Conductivity screen will appear (Picture 11) when TDS component is pressed on the main screen.



Picture 11. TDS/Conductivity Screen

Setting values include CONTROL MODE, SETPOINT, TDS CF, MAKEUP COND, MODE, DOSE TYPE, ALARM MODE, ALARM RANGE and OUTPUT. Press each parameter to input a value or chose pre-determined options.

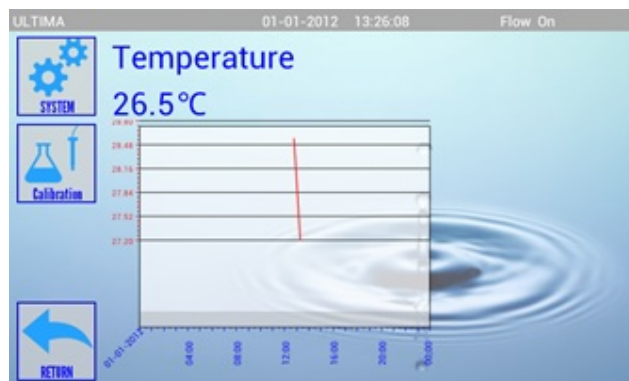
CONTROL MODE: is provided to use either TDS or Conductivity mode for control.

OUTPUT: Bleed solenoid is wired to output 5 on the power board. Any changes to the TDS/CONDYCTIVITY output must be made by Aquarius agents, certified electricians or an authorised service technician.

CALIBRATION: Calibration of TDS sensor is always performed using a pre-measured value. It is highly recommended to use calibrated tester or certified solution to obtain Conductivity values.

Part Number: AS1413: 1,413 µS/cm conductivity solution

Temperature calibration through Temperature screen is recommended before performing conductivity calibrations (Picture 12).



Picture 12. Temperature Screen

The Temperature component has no setting values as it is not controlled.

ORP Configuration

On the main screen touch the ORP parameter box. The ORP screen will appear (Picture 13).



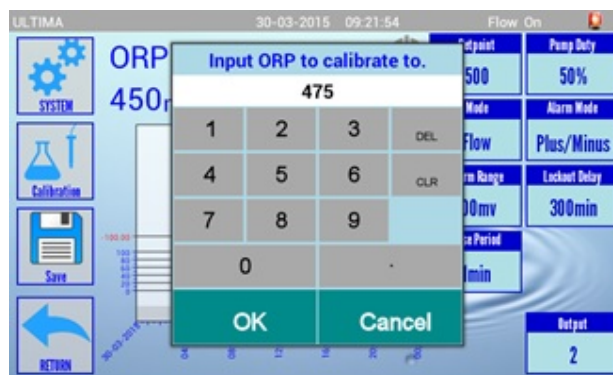
Picture 13. ORP screen

Setting values include SETPOINT, PUMP DUTY, MODE, ALARM MODE, ALARM RANGE, LOCKOUT DELAY and OUTPUT. Press each parameter to input a value or chose pre-determined options.

CALIBRATION: Choose between QUICK and PRECISE calibrations and follow the instructions. A PRECISE calibration is recommended on commissioning, every month and when a new probe is installed. (Picture 14)



Picture 14. ORP Calibration Screen



Picture 15. Quick ORP Calibration Screen

For PRECISE calibration the following calibration solutions are required:

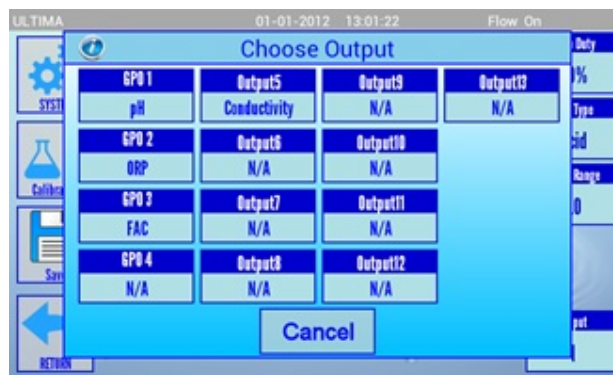
Part Number: AS4250 - 250 mV

Part Number: AS5475 - 475 mV

Press the SAVE icon for saving new settings after editing. A pop-up screen with confirmation of savings of new settings will appear. New settings will also be saved when pressing RETURN icon and returning to the MAIN screen.

The performance Chart has historical values on the current date; week or month (Double click on chart area to load the desired component). Also shown on the graph are indications of dosing duty values for those periods.

Setting values include SETPOINT, PUMP DUTY, MODE, ALARM MODE, ALARM RANGE, LOCKOUT DELAY and OUTPUT. Press each parameter to input a value or chose pre-determined options. OUTPUT box shows the CHOOSE OUTPUT screen (Picture 16).



Picture 16. Choose Output Screen

Press the chosen output to use that output instead of the currently assigned one if required.

CAUTION: Use outputs 1 to 4 only as they are wired to the GPO plugs 1 to 4 labelled on the protection cover inside the controller (Refer to the Picture 1. Protection cover) Outputs 5-8 should be used only if they are wired according to the purchase order. Outputs 9 to 13 are low power (can switch up to 50V/0.5A/10W peak) signal relays for use with switching dosing pumps or similar applications.

pH Configuration

On the main screen, touch the pH parameter box. The pH screen will appear (Picture 17).



Picture 17. pH screen

CALIBRATION icon allows the option of: QUICK and PRECISE calibration (Picture 18).



Picture 18. pH CALIBRATION Screen

Choose between QUICK calibration using a known pre-measured value or PRECISE calibration using calibration solutions. Follow the instructions on the screen to complete the calibration. It is recommended to perform PRECISE calibrations on commissioning, every month and when a new probe is installed.

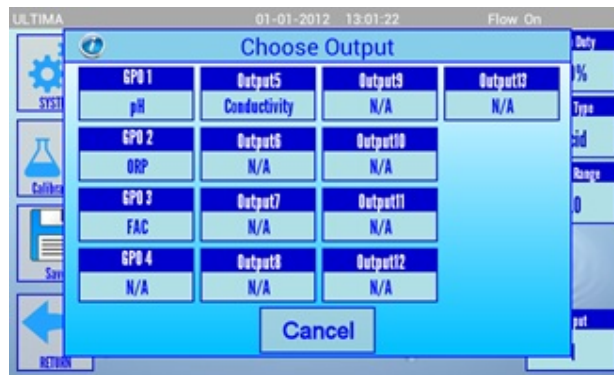
Part Number: AS7004 - pH 4.01

Part Number: AS7007 - pH 7.01

Press the SAVE icon for saving new settings after editing. A pop-up screen with confirmation of savings of new settings will appear. New settings will also be saved when pressing RETURN icon and returning to the MAIN screen.

The performance Chart has historical values on the current date; week or month (Double click on chart area to load the desired component). Also shown on the graph are indications of dosing duty values for those periods.

Setting values include SETPOINT, PUMP DUTY, MODE, DOSE TYPE, ALARM MODE, ALARM RANGE, LOCKOUT DELAY and OUTPUT. Press each parameter to input a value or chose pre-determined options. OUTPUT box shows the CHOOSE OUTPUT screen (Picture 19).



Picture 19. Choose Output Screen

Press the chosen output to use that output instead of the currently assigned one if required.

CAUTION: Use outputs 1 to 4 only as they are wired to the GPO plugs 1 to 4 labelled on the protection cover inside the controller (Refer to the Picture 1. Protection cover) Outputs 5-8 should be used only if they are wired according to the purchase order. Outputs 9 to 13 are low power (can switch up to 50V/0.5A/10W peak) signal relays for use with switching dosing pumps or similar applications.

pH B Configuration

This is used to control pH between two limits using Acid and Base. Push NEXT and pHB to configure this. For more details refer to pH configuration.

Inhibitor Configuration

On the main screen, touch the Inhibitor parameter box. The Inhibitor screen will appear to allow the user to set inhibitor settings. Setting values include MODE (including Disabled, Bleed, Continuous, Flow, Water Meter, Corrosion and Flow (not available for all models)), PUMP SIZE, DOSE RATE and OUTPUT. Press each parameter to input a value or chose pre-determined options. (Picture 20)



Picture 20. Inhibitor screen

When Water Meter mode is selected, the system asks for PUMP SIZE and PPM (Part Per Million of inhibitor). (Picture 21)



Picture 21. Inhibitor screen

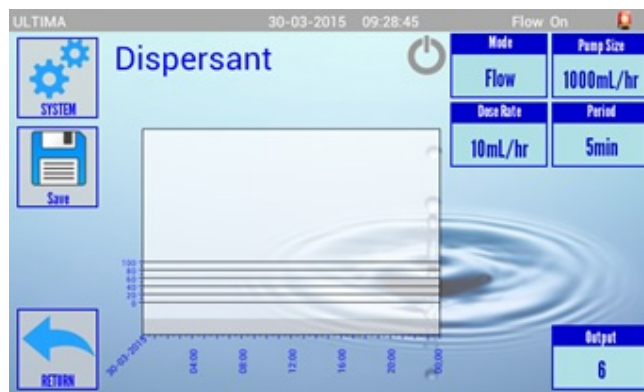
OUTPUT box allows a different output for Inhibitor to be chosen. Please note **CAUTION** for ORP and pH before setting OUTPUT.

Dispersant Configuration

On the main screen, press NEXT. Now touch the Dispersant parameter box. The Dispersant screen will appear to allow users to set dispersant settings. (Pictures 22 and 23)



Picture 22. Dispersant parameter box.



Picture 23. Dispersant screen

Setting values include MODE (including Disabled, Flow, Continuous, ORP, Bleed, and Inhibitor), PUMP SIZE, DOSE RATE and OUTPUT. Press each parameter to input a value or choose pre-determined options. (Picture 23)

Period: Increasing the period, allows lower chemical dose rates to be achieved from a large pump. The default period is 1min, which means that the controller regulates the pump to get the dose rate for each minute. When it is set to 10min, the controller regulates the pump every 10minutes. This allows lower dosing rates from large pumps and doses more accurately. Period is automatically adjusted when pump size and dose rates are selected.

Timers Configuration

On the main screen touch the TIMERS icon box. The TIMERS screen will appear (Picture 24). There are six timers available.



Picture 24. TIMERS Screen

Timers are used to run an output at a chosen time. Press one of the six TIMERS (Picture 25).



Picture 25. TIMER Screen

TIMER NAME: press this button and select a name for this timer.

OUTPUT: Select the output which you would like to run under this timer. Outputs linked to other components such as pH or ORP will be labelled.

MODE: Select one of the following modes:

- Disable: Disables the timer
- Timer: The output will work when the timer is on regardless of flow or measurements
- Timer and Flow: The output works when timer and flow are ON simultaneously
- Timer and Probe: This is for components that use a probe (pH, ORP, FAC, TDS). The selected component will be controlled in "Continuous" mode while the timer is active. When the timer is inactive, the component will control the output using it's displayed mode.
- Timer, Probe and Flow: This is for components that use a probe (pH, ORP, FAC, TDS). The selected component will be controlled in "Flow" mode while the timer is active. When the timer is inactive, the component will control the output using it's displayed mode.

WEEKS: The year is divided into 4 week cycles. The current week is shown as a highlighted box. Select which weeks this timer will be active for by pressing one, two, three or all four buttons. Active weeks are highlighted in Blue, inactive weeks are grey.

Use Accessory Timers if you wish to control more than one output using the same timer.

Select Day of the week. Pop-up screen will appear (Picture 26).



Picture 26. SET TIMER Screen

Tick the ENABLE checkbox to activate the timer for this day. Select Start Time as hours and minutes. Then select Duration period as hours, minutes and seconds. To copy the selected start time and duration to all days press APPLY TO ALL. **Note:** For extra day timers to activate, press the day box required and tick the ENABLE checkbox to activate the timer with the same settings as the other days.

Press OK to return to SET TIMER screen. Press SAVE or RETURN to save all changes to this timer. The next active time for a timer is displayed on that timer's button.

Outputs Configuration

On the main screen touch the Outputs parameter box. The OUTPUTS screen will appear (Picture 27). There are thirteen output selections on this screen. An illuminated blue power icon will show if this relay is ON – A non illuminated Grey power icon will show if this relay is OFF.



Picture 27. OUTPUTS screen

Outputs 1 to 4 are wired to GPO's 1 to 4 by default. These are available for use by any component.

Outputs 5 to 7 will be used only on special orders hard wired to external relays or components.

Output 8 will be used only on special orders hard-wired to an inbuilt 10-15A relay, for the use of directly switching chlorinators, large pumps etc.

Outputs 9 to 13 are low power (can switch up to 50V/0.5A/10W peak) signals for use with switching dosing pumps or similar applications.

Press any output for setting or editing this output. A pop up screen will appear (Picture 28).



Picture 28. OUTPUT SETTINGS pop-up screen

Press TITLE box to name or edit the name of this output.

Press OUTPUT MODE to choose the required mode of this output. Using this function you can temporarily or permanently change the output mode. The following options are available:

- **Component:** The output can be controlled normally by a component or timer, if linked. If no component or timer uses this output it will always be OFF.
- **Forced OFF:** The output is always off regardless of any linked components or timers. The output will only be activated by manual dosing, or changing the output mode.
- **Forced ON:** The output is always on regardless of any linked components or timers. The output will only be de-activated by changing the output mode.

Note: You need to be very careful when selecting Forced ON or Forced OFF options as this will force that particular output perpetually ON or OFF.

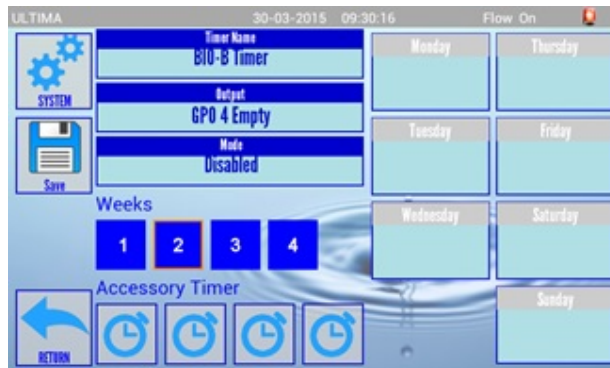
Press MANUAL dosing to temporarily override all other settings and turn the output on for the selected duration in minutes and seconds. This may be useful for priming a pump or testing outputs. Counting down timers show the remaining time the manually dosing of each individual output.

Note: To stop manual dosing of a running output, press the parameter on output pages and push STOP. This stops manual dosing of that particular output. Repeat the process for the other outputs individually.

Bio B Timer Example (Default)

The secondary biocide timer **Defaults** are explained as a proper example for accessory timers

Assume Bio B timer is set on Mondays at 08:00 for 1hr (Photo).



The following accessory timers can be set:

Accessory timer 1: Pre-Bleed for 15 minutes considering safety to avoid water waste

Output: Conductivity

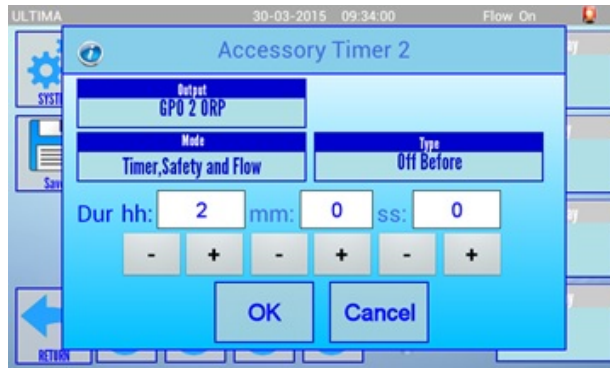
Mode: Timer, Safety and Flow

Dur: mm: 15

Type: On Before



Accessory timer 2: Stop ORP (dosing oxidizing Biocide) 2 hours before dosing Bio B
Output: ORP
Mode: Timer, Safety and Flow
Dur: hh: 2
Type: OFF Before



Accessory Timer 3: Bleed Lock out for 4 hours considering safety for avoiding TDS build-up
Output: Conductivity
Mode: Timer, Safety and Flow
Dur: hh: 4
Type: OFF With

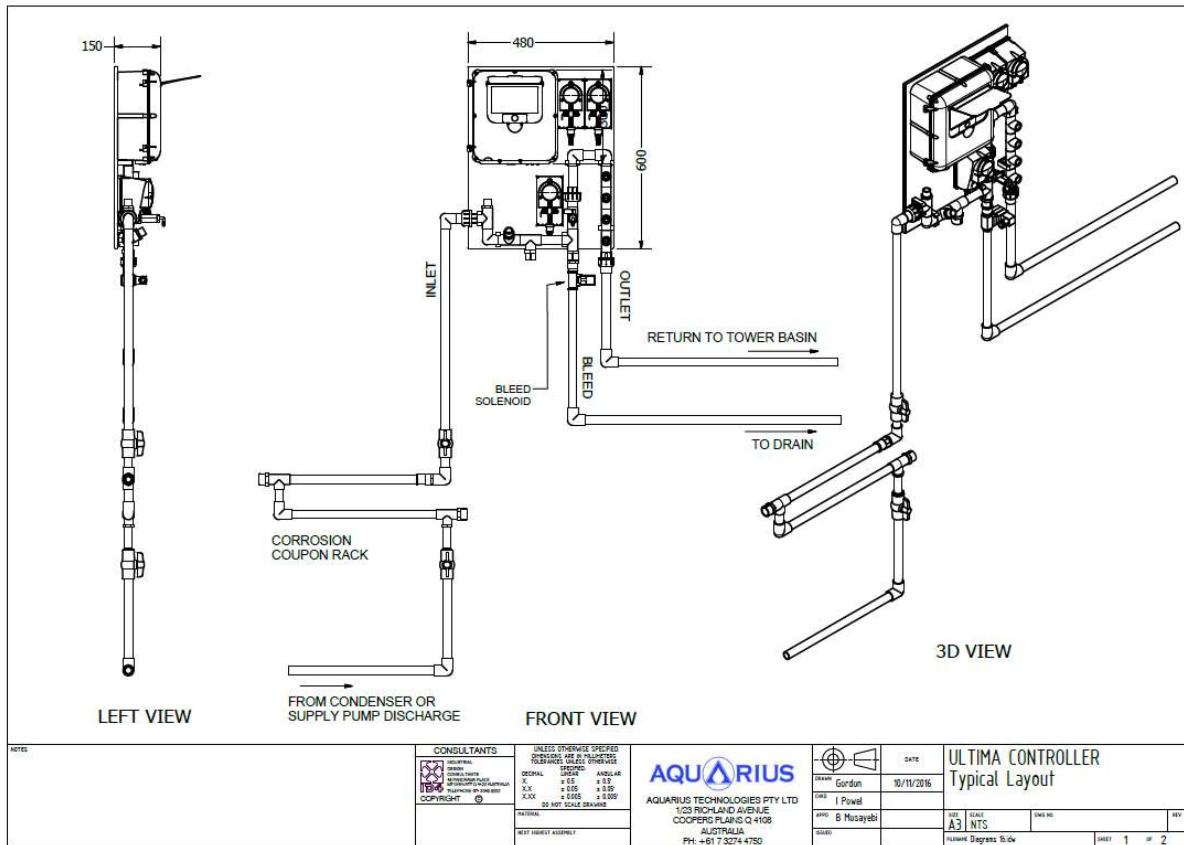
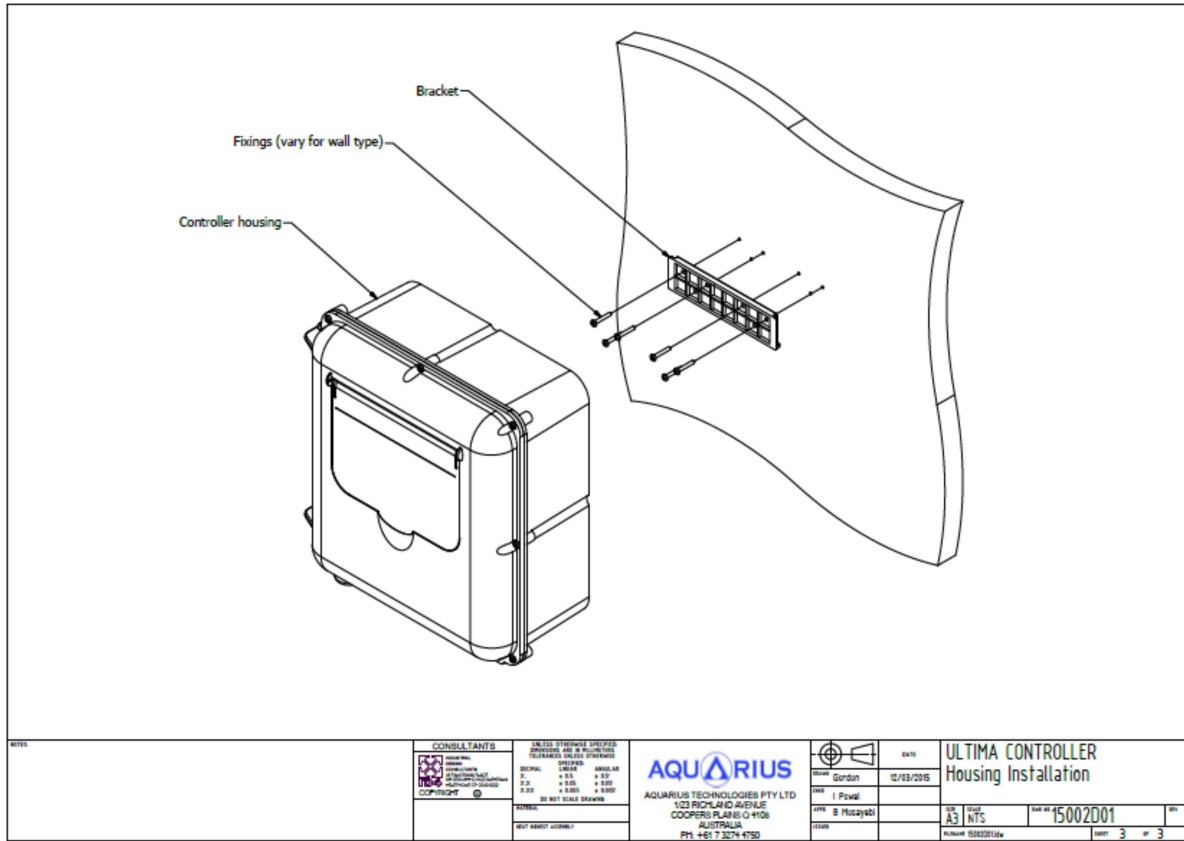


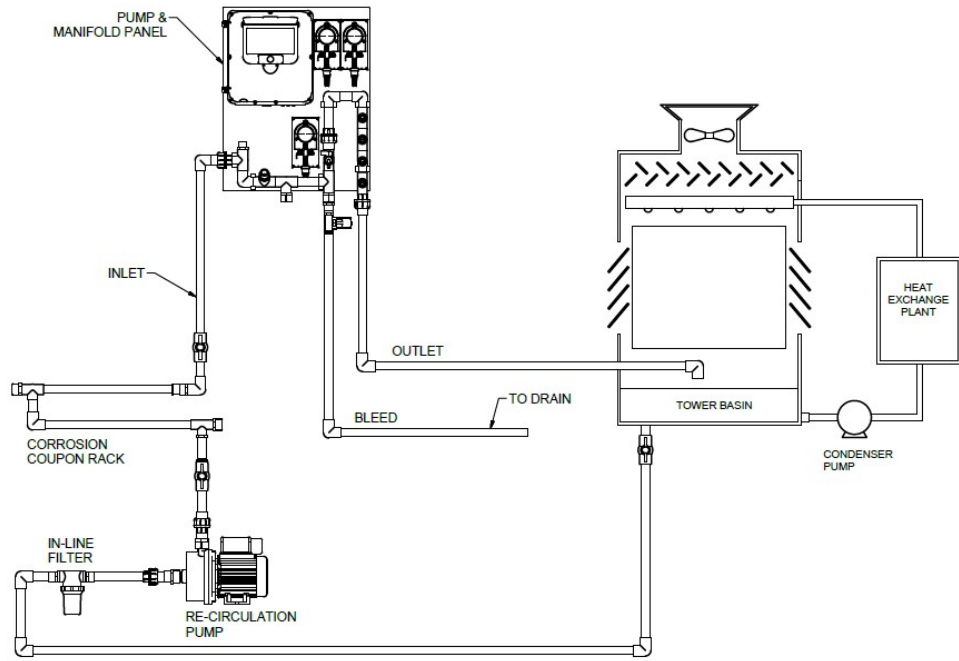
Accessory Timer 4: Keep the ORP OFF during the Bleed Lock out to avoid side effects on Bio B
Output: ORP
Mode: Timer, Safety and Flow
Dur: hh: 4
Type: OFF With



ATTACHMENT:

Typical Installation Diagrams:





NOTES

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FINISHES SEE PROJECT SPECIFICATIONS		
BEST INTEREST ASSEMBLY		

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CHECKED I Powell
APPROVED B Mccayabhi
SCALE A3 NTS
SHEET 2 OF 2

ULTIMA CONTROLLER
 Typical Installation Layout

DESIGNED Degross W. Giv	DRAWN Gordon	CHECKED I Powell	APPROVED B Mccayabhi
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REVISED APRIL 03