AQUARIUS TECHNOLOGIES PTY LTD

Cooling Water Treatment Controllers

Sales Bulletin
Dec 2008 Rev 7

Cooling Water Treatment Controllers

The BEST investment you could ever make!!

Owners of major assets with cooling tower equipment are usually faced with conflicting demands that are seeking high performance at lowest cost.

Aquarius has placed particular emphasis on developing equipment that addresses those needs.

Would you like to own a water treatment controller that will:

- guarantee you disinfection at all times?
- substantially reduce your water consumption costs?
- effectively drive down your chemical costs?
- cut your energy costs?
- reduce your maintenance costs?
- extend equipment replacement cycles?
- reduce exposure to facility downtime?

If the answer is yes, then an Aquarius Controller for your Water Treatment will deliver that promise.

Aquarius Technologies offers a complete range of Cooling Water Treatment Controllers to suit a wide variety of service applications. Every Aquarius model has been designed for optimum performance whilst ensuring protection of your valuable cooling system and plant.

New generation Aquarius Controllers have application layer software that introduces genuine 'intelligent processing'. The microprocessor chip is programmed to make logical responses to input data and measured observations that will optimize treatment control.

The layered software installed in the controllers is the product of years of experience gained through our continued commitment to research and development, an understanding of the water treatment professionals objectives and the analysis of past equipment performance using our flagship KPI monitoring and controlling platform.

Aquarius have brought the best of technology in electronics and combined that with our own adaptation of logical modelling modules to create a new and improved software suite that is able to assist in generating the superior treatment regimes for its controllers.

Known as Aquarius Proprietary Logic (APL), this unique program module has patent applications pending, and is featured in all new controllers in the Aquarius brand stable.

Aquarius Technologies Pty Ltd develops the most advanced water treatment controllers in today's market

Typical Applications

- Comfort Cooling Towers
- Air-conditioning Cooling Systems
- Ammonia Refrigeration Cooling systems
- Process Cooling Systems
- Refinery Cooling Systems
- Power Station Cooling Systems

Cooling System Sizes

Models are available within the range to cover cooling systems from 100 kWR heat rejection to over 50,000 kWR heat rejection in standard units and operating from 2 cycles to over 25 cycles of concentrations. Use of the Aquarius CWT_Calc template instantly selects and optimizes dosage pumps and solenoids to suit both the particular cooling system, and the particular water treatment chemistry regime. For systems larger than 50,000 kWR heat rejection Aquarius treats each of these jobs as a project and offers a total system with dosage pumps to meet the particular system specifications.

Water Treatment Chemistry

Models are available to cover Water Treatment programs utilizing:

- Non Oxidising Biocide programs
- Oxidising biocides such as Sodium Hypochlorite and with and without pH control
- Oxidising biocides such as Liquid Bromide formulations and with and without pH control
- Oxidising biocides such as BCDMH tablets and with and without pH control
- Oxidising biocides such as Chlorine Dioxide with and without pH control.

Aquarius Cooling Water Treatment Controllers have been developed over the past 17 years and examples can be found in CBD air-conditioning systems, Hospitals, Universities, Abattoirs, Refineries, Nuclear Industry, Steel Mills, Alumina Refining, and Power Stations in Australia, New Zealand, Singapore, Malaysia, Korea, China, Thailand, India and Pakistan.

Introducing the ALL NEW family of **Cooling Water Treatment Controllers** for applications in water treatment programs

Features

- Automated water treatment management system – chemical dosage and conductivity (TDS) control are regulated based on the demand from the system, whilst maintaining the set desired parameters for efficient water treatment.
- Adapts to user configured /specified water treatment chemical regimes.
- Combination probes – pH/ORP/Ground Ref and Conductivity/Temperature/Flow allow for a compact unit with maximum data for control and logging.
- Data logging of all measured parameters and dosages with internal storage in excess of 30 days of data, on 24/7 basis.
- Optional ModBus protocol to interact with BCMS.
- Optional 4 – 20 mA outputs for data to BCMS.
- Option for remote control on 24/7 basis allows for:
  a) SMS Alarms to 3 nominated phone numbers
  b) Remote data downloads and/or remote changing of set point values using a modem and Aquarius AquaGuard 2 software
  c) CWT_graphs.xlt template allows for automatic import of data into an Excel spreadsheet which provides a Data Summary, Trend Charts or Graphs and Histograms for simple and easy inclusion in client reports.
- All Aquarius “C” series controllers allow for disinfection routines to be programmed at various weekly schedules using oxidising or non-oxidising chemicals.
- APL – Aquarius Proprietary Logic has been introduced to control oxidising biocide dosage (ORP) and pH control with pin-point accuracy to set point. The introduction of this breakthrough technology is a reflection of our commitment to provide superior products that enhance your water treatment control options and benefits to your site
- LSI – Langelier Saturation Index values are calculated from a combination of sensor data and input of calcium hardness and displayed to allow for maximum system concentrations, minimum bleed off and water conservation and without scale formation.
- All Cooling Tower Controllers are built to a Quality Assurance system, are weatherproof to IP65 standard, and come with a 12 months warranty. - See Warranty details in User Manual.

User Benefits

- All Aquarius Controllers are designed by our professional R & D team with over 40 years of water treatment chemistry experience. Since 1989 this speciallised team has been developing control and dosage equipment for the water treatment industry. The Aquarius R & D team currently comprises water treatment chemists, computer programmers, and electronic technicians; all pooling their knowledge and effort to enhance the development of water treatment dosage and control equipment by utilising the latest in computer and electronic technology with electrochemistry principles.
- Options for remote control on 24/7 basis allow for:
  a) SMS Alarms to 3 nominated phone numbers
  b) Remote data downloads and/or remote changing of set point values using a GSM modem and Aquarius AquaGuard 2 software
  c) Software suite that allows spreadsheet report generation of Data Logged information for scrutiny and analysis to ensure targets are consistently achieved, with abnormalities identified and rectified.
- All Aquarius “C” series controllers allow for disinfection routines to be programmed at various weekly schedules
- With Aquarius Cooling Tower Controllers you can choose models to accommodate
  – Non-Oxidising Biocide programs
  – Oxidising biocides based on Sodium hypochlorite and with and without pH control
  – Oxidising biocides utilizing hypochlorite and Sodium Bromide (Liquid Bromine Formulation) with and without pH control or
  – Utilizing BCDMH tablets as the source of Oxidising biocide.
- Aquarius delivers efficient and economical solutions with our unique firmware and software programs and our enhanced chemical injection technology, offering the owner:-
  a) Savings in water costs and chemicals usage
  b) Savings in electricity from reduced biofouling or scaling
  c) 24/7 supervision of your water treatment program
  d) 24/7 Alarms relayed to service personnel by mobile phone for rapid response and correction
  e) Programmed or remote commencement of disinfection routines in the case of a positive LDB test
  f) Historical Records of the chemistry parameters and the various dosages for performance review
  g) Peace of Mind that your plant is operating efficiently and at “worlds best practice”

CT - Series

Non- Oxidising Biocides

CH - Series

Sodium Hypochlorite Biocides

CP - Series

Non- Oxidising Biocides with pH

CL - Series

Liquid Bromine Biocides

"C" Series - General Specifications for Cooling Water Treatment Controllers				
Enclosure	Fully Weatherproof rated to IP53 - Protect from freezing, maximum ambient temperature 40 °C.			
Electrical Supply	220 - 250 Vac 50 or 60 Hz, 10 Amp continuously powered "clean" mains supply - 7 Amp output relays.			
Microprocessor (16 bit 20 MHz)	Industrial quality microprocessor, supports proprietary firmware, including boot loader for upgrade of software via the serial port. Data logging is a standard feature. When combined with remote comms package - the unit is capable of transmitting alarms by SMS to up to 3 phones. Using AquaGuard 2 software all settings, statuses, and downloads can be modified or determined remotely from a PC.			
Sensors **PR_FCT** **PR_PHRG**	Units are shipped with combination sensors as required for the configuration. Combination sensor for Flow/Conductivity/Temperature. Combination sensor for pH/ORP/Ground Reference. These probes are designed to reduce external influences to ensure more accurate readings.			
Module Designation	**pH - values**	**ORP - millivolts**	**Conductivity - mS/cm**	**Temperature as °C**
Operating Range	0 - 14.00 pH	0 - 999 mV	0 - 9.99 mS/cm	0 - 100 °C
Resolution	0.01 pH	1 mV	0.01 mS/cm	0.1 °C
Accuracy	+/- 0.02 pH	+/- 1 mV	+/- 0.02 mS/cm	+/- 0.2 °C
Repeatability	+/- 0.02 pH	+/- 2 mV	+/- 0.01 mS/cm	+/- 0.2 °C
Alarm Range	+/- 0 - 3.5 pH	+/- 0 - 400 mV	+/- 0 - 2.0 mS/cm	+/- 0 - 20.0 °C
Dead Band	N/A	N/A	0.05 mS/cm	N/A
Control Type	APL	APL	ON/OFF	N/A
Sensor Press. Rating	700 kPa.	700 kPa.	700 kPa.	700 kPa.
Sensor Temp Rating	60 °C	60 °C	60 °C	60 °C
Alarms User Defined No-Volt Contact	All defined set points are able to be associated with alarm outputs as +, -, or +/- ranges. The Alarm signals may be directed to various output destinations. A standard common no-volt alarm is incorporated in all controllers for DDC operation.			
Data Logging	Data logging of analog readings and the relay ON times is standard - Data logging can be set from 1 min to up to 240 minutes intervals. At 30 minute intervals the data log can contain up to 45 days data or approx. 2400 lines of data, downloadable either locally to a laptop or remotely via a GSM modem.			
Calibration	All measures are auto calibrated using the CAL Screen selection window. pH/ORP Calibration and verifcation can be performed as a combined calibration with less time needed on site.			
Chemical Dosage Pump	The Aquarius range of peristaltic pumps with flow rate of 1.0 l/h or 3.0 l/h and rated to 350 kPa are specifically designed for this application. Larger pumps or higher pressure pumps are available where required.			
Manifold Ratings Press. & Temp. rating Flow rate required Plumbing	Manifolds are designed from uPVC and rated to 700 kPa at 70 °C - Maximum Temperature = 70 °C. A minimum flow rate of 10 - 12 lts/minute is required to activate the flow sensor. Plumbing inlet and outlets are 20 mm BSP fem. threads or can be fitted with 19 mm hose tails.			
Non-Oxidising & Oxidising: Biocide Programs & Timer Control	**Bio A and Bio B** - are controlled by two independent timers, microprocessor controlled to operate on an individual day, or Mon to Fri, Mon + Wed + Fri, or everyday basis. Prebleed and Bleed lockout facilities can be programmed for each timer to operate in conjunction with biocide dosing. **Bio B** - One independent timer is microprocessor controlled to operate on an individual day, or Mon to Fri, Mon + Wed + Fri, or everyday basis. Prebleed and Bleed lockout facilities can be programmed for each timer to operate with biocide dosing. **Timer** on ORP models can be used to control ORP output in TMR mode.			
Inhibitor Dosage	Inhibitor dosage can be controlled in **Continuous/Bleed/Flow** modes with duty cycle control.			
Dispersant Dosage	Dispersant dosage can be controlled in **Continuous/Bleed/Flow/Inhib/ORP** modes with duty cycle control.			
ORP Dosage	Oxidisng Biocide dosage can be controlled in **Flow/Continuous/Timer/Off** mode and is managed to a tighter set point using APL software.			
pH Dosage	pH level can be monitored or controlled in **Flow/Continuous/Off** mode and is managed to a tighter set point using APL software.			
APL Software	Aquarius Proprietary Logic application software is specifically programmed to initiate intelligent responses to inputs. Through consistent monitoring, calculating and responding, it narrows the variation in hysterisis to 1%, optimising water treatment control for accurate Set Point retention.			
Display/Key Pad	Incorporates 4 lines x 20 (80 char) digital backlit display with touchpad operation. This ensures clarity even in low or non-lighted locations.			
Flow Sensing	Flow Sensing can be individually controlled for each module (Conductivity, ORP, pH, Inhibitor, Biocide & Dispersant) to allow for site specific requirements.			
Test and Priming Screen	Auto test can be initiatied on all relay outputs and manual pump priming can be activated without varying the settings of the controller.			
Safe Memory	Our PCB board incorporates a non-volatile memory for safe storage of set points and programs that are not susceptible to power loss.			

Models where OXIDISING BCD Tablet Feeders are used with optional pH control				
Detail Specifications	**CO10000**	**CO11000**	**CO11300**	**CO11310**
Dose Pump - Inhibitor	As Selected	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr
Dose Pump - Acid	As Selected	Optional	Optional	Optional
Dose Pump - BCDMH	As Selected	Optional	Optional	Optional
Dose Pump - Sod. Bromide	As Selected	See CL	See CL	See CL
Dose Pump - Biocide B	As Selected	Optional	3.0 lts/hr	3.0 lts/hr
Dose Pump - Dispersant	As Selected	Optional	Optional	1.0 lts/hr
Dose Pump Type	As Selected	Peristaltic		
Dose Pump Press. Rating	As Selected	350 kPa.		
Bleed Solenoid Fitted	15 mm Bleed Solenoid			
Sensors Fitted	PR_FCT and PR_PHRG			
Shipping Dim. and Weight	Cartons are 525 mm x 640 mm x 210 mm and cubed shipping weight is 18 kgs.			
Communications Port	Interfaced to any RS232 device via the DB9 plug on the circuit board internally located.			
Options on these models Bleed Solenoid Kits BCD Feeders Socket Outputs Kits Extended Solenoid Cable	Bleed Solenoid kits are available for 15 mm, 20 mm, and 25 mm. BCD Feeders are available in 16 kgs, 33 kgs and 100 kgs models. Independent isolated power outlets, relay activated, 10 Amp and 15 Amp mains supply. Lengths of 240 Vac cable for remote bleed solenoids in 5, 10, 15 metre lengths.			

Models where SODIUM HYPOCHLORITE - (Liquid Chlorine) is used and with pH Control				
Detail Specifications	**CO10000**	**CH111300**	**CH111330**	**CH111331**
Dose Pump - Inhibitor	As Selected	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr
Dose Pump - Acid	As Selected	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr
Dose Pump - Sod. Hypo	As Selected	3.0 lts/hr	3.0 lts/hr	3.0 lts/hr
Dose Pump - Bio B	As Selected	Optional	3.0 lts/hr	3.0 lts/hr
Dose Pump - Dispersant	As Selected	Optional	Optional	1.0 lts/hr
Dose Pump Type	As Selected	Peristaltic	Peristaltic	Peristaltic
Dose Pump Press. Rating	As Selected	350 kPa.		
Bleed Solenoid Fitted	15 mm Bleed Solenoid			
Sensors Fitted	PR_FCT and PR_PHRG			
Shipping Dim and Weight	Cartons are 525 mm x 640 mm x 210 mm and cubed weight is 18 kgs.			
Communications Port	Interfaced to any RS232 device via the DB9 plug on the circuit board.			

Models Using SOD. HYPO and SOD. BROMIDE (Liquid Bromine) and with pH control				
Detail Specifications	**CO10000**	**CL113100**	**CL113130**	**CL113131**
Dosage Pump - Inhibitor	As Selected	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr
Dosage Pump - Acid	As Selected	Optional	Optional	Optional
Dosage Pump - Sod. Hypo	As Selected	3.0 lts/hr	3.0 lts/hr	3.0 lts/hr
Dosage Pump - Sod Bromide	As Selected	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr
Dosage Pump - Biocide B	As Selected	Not Used	3.0 lts/hr	3.0 lts/hr
Dosage Pump - Dispersant	As Selected	Optional	Optional	1.0 lts/hr
Dosage Pump Type	As Selected	Peristaltic		
Dosage Pump Press. Rating	As Selected	350 kPa.		
Bleed Solenoid Fitted	15 mm bleed solenoid			
Sensors Fitted	PR_FCT and PR_PHRG			
Liquid Bromine Dosage	The Chlorine and Sod. bromide pumps are controlled by the same relay from ORP output. The ration of chlorine to bromide is controlled by dose pump selection.			
Shipping Dim and Weight	Cartons are 525 mm x 640 mm x 210 mm and cubed weight is 18 kgs			
Communications Port	Interfaced to any RS232 device via the DB9 plug on the circuit board.			

Models where NON - OXIDISING BIOCIDES are used - CT = without pH or CP = with pH						
Detail Specifications	**CT10000**	**CT11330**	**CT11300**	**CP111300**	**CP111330**	**CP111331**
Dose Pump - Acid	N/A	N/A	N/A	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr
Dose Pump - Inhibitor	As Selected	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr	1.0 lts/hr
Dose Pump - Bio A	As Selected	3.0 lts/hr	3.0 lts/hr	3.0 lts/hr	3.0 lts/hr	3.0 lts/hr
Dose Pump - Bio B	As Selected	3.0 lts/hr	Optional	Optional	3.0 lts/hr	3.0 lts/hr
Dose Pump - Dispersant	As Selected	Optional	Optional	Optional	Optional	1.0 lts/hr
Dose Pump - Type	As Selected	Peristaltic	Peristaltic	Peristaltic	Peristaltic	Peristaltic
Dose Pump - Press Rating	As Selected	350 kPa.				
Sensors Fitted	PR_FCT			PR_FCT and PR_PHRG		
Bleed Solenoid fitted	A 15 mm Bleed solenoid is fitted as standard - 20 mm Solenoid is optional.					
Shipping Dim. and weight	Carton Dimensions are 525 x 640 x 210 mm and cubed weight is 18 kgs.					
Communications Port	Interfaced to any RS232 device via the DB9 plug on circuit board internally.					

Options and Accessories for Remote Control and Alarms	
GSM Modem	Provides for Alarms outputs to 3 nominated phone numbers using of AquaGuard 2 remote control software via mobile GSM network. Data SIM card is required.
Landline Modem	Provides for remote communications via landline phone connection, where GSM network is unavailable.
AquaGuard 2 software	Software for full remote control from a PC. Allows changing of set points, start up disinfection, download data, and import to CWT_graphs.xlt for water treatment summary, trend charts, and a database history of results in case of litigation, all from your office or laptop via the mobile data network.
ModBus	Industry standard protocol for data communcations between BCMS and controller.
BMS 4 - 20 mA outputs	Plug on card provides 4 or 8 analog signals as 4 - 20 mA + 4 events as contact only signals - means of data transfer to BMS system.

Other Options to complete and maintain the system	
Water Usage Metering (WUM)	Optional WUM card can be used with a impulse water meter to track water make-up and bleed amount of the cooling system
Water Meter	An impulse water meter that provides pulses proportional to flow can be added to allow for Inhibitor dosage in proportion to system make up rate.
Tank Alarm	To provide warning when chemical tank is near empty. Comes in size of 500mm or 1000mm. It can be configured for closed contact on empty or open contact on empty.
4-20mA Analogue Input	Accepts a 4-20mA signal from a stand-alone meter. Data are displayed on the Aquarius Controller and data logged. Alarm can also be activated via SMS.
SS_RACK	Stainless steel skid and base for mounting the controller, circulation pump and BCD feeder in a neat compact package.
Condenser Pump	Condenser Pump override facility during biocide dosing
Circulating Pump	A range of circulation pumps are available for independent circulation of the system or to provide adequate flow and pressure to the controller.
Buffers and Calibration solutions	Aquarius can supply all buffers, calibration solutions and standards for maintaining the system at worlds best practice standard.
Spare Parts and Replacements	Aquarius maintains a huge stock of spare and replacement parts for quick and easy delivery via overnight freight.
ON - SITE Service	Aquarius has trained contractors to carry out installation, commissioning, and or trouble shooting and repairs in all capital cities of Australia.

Other Sales Bulletins from Aquarius

KPI Intelligent Water Treatment Controllers
Swimming Pool Disinfection Controllers
Trade Waste or Effluent Controllers
Potable Water Disinfection Controllers
AquaGuard 2 Water Management Software
for remote control interface from a PC
Aquarius Peristaltic Pumps Range

Distributed By

AQUARIUS
TECHNOLOGIES PTY LTD
WATER QUALITY CONTROL

Phone: +617 3274 4750 Fax: +617 3274 4736
email: info@ aquariustech.com.au www.aquariustech.com.au

Unit 1, 23 Richland Ave Coopers Plains, Queensland 4108
P.O. Box 71, Coopers Plains, Queensland 4108, Australia