Company Information

Aqualine International (Australia) has been designing and manufacturing salt-water chlorination systems for swimming pools in Australia for more than 30 years. Products are currently exported throughout Europe, America, Canada, Middle East & South America with a variety of designs including Saltmaster, Ultra-Chlor, Aqua-Sel, Seltonic Le Parafrance, Neptune & Eectrosel along with pH, ORP controllers & chemical dosers. Systems can be supplied for small domestic pools through to large-scale, custom-designed commercial systems.

Aqualine International has distributors worldwide & the fact that most of those distributors have been with Aqualine since 1984, & still are, should give future clients full confidence in dealing with the company.

Benefits of Salt-Water Chlorination

SALT WATER CHLORINATION is the safest & most economical method of sanitising pool water. The technology has been adopted in Australia for over 39 years where approximately 95% of all new pools are salt water chlorinated. It is widely preferred because of its ease of maintenance, water quality & ease of algae control.

Australia is considered to be the leader in this technology, with products exported worldwide. The technology offers considerable benefits over others. WHY? The reasons are simple:

IT’S CHEAPER:
• Saves on labour;
• Saves on chemicals;
• Running costs much lower than the alternatives.

The HEALTH BENEFITS are:
• No RED eyes;
• No dry, itchy skin;
• No chlorine taste or smell;
• Hair condition unaffected by chlorine;
• Proven to be advantageous to asthma & allergy sufferers.

It allows BETTER SWIMMER COMFORT – by eliminating the need for the harsh chemicals, you eliminate the source of the irritation that plagues swimmers in most pools.

IT’S SAFER: Chlorinators manufacture & deliver chlorine to the swimming pool automatically. The pool owner no longer needs to purchase, transport, store or manually add chlorine which can be potentially hazardous.

IT’S AUTOMATIC so reduces the maintenance required; Switch on the unit, set the desired Chlorine Production & there is no more to do.
Inhouse PCB (Printed Circuit Boards) Production

Better Quality Control

All our products are RoHS compliant, free of:

- Pb (Lead, max 0.1% weight)
- Hg (Mercury, max 0.1% weight)
- Cd (Cadmium, max 0.01% weight)
- Cr VI (Hexavalent Chromium, max 0.1% weight)
- PBB (PolyBrominated Biphenyls, max 0.1% weight)
- PBDE (PolyBrominated Diphenyl Ethers, max 0.1% weight)
YES ... Opportunities for your OWN branding are Available!

Your Brand Name!!
The Original Saltmaster Salt Water Chlorinator

• Now constructed from PC/ABS moulded plastic to reduce weight, corrosion & to increase ventilation

• For pools from 3,000 litres to 300,000 litres

• Options available:
  - With or without Timer
  - Panel Meter or LED display
  - Standard or Reversible Cell
  - Cell Sizes: 10, 15, 20, 30, 40 Amp

Self-Cleaning cells are manufactured using the highest quality platiniun-coated titanium.

<table>
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<tr>
<th>Model</th>
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<td>SSMSC9P</td>
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</table>
The Original Saltmaster
Now for FRESHWATER...

- Runs with TDS between 1000 – 2000ppm!!
- Now constructed from PC/ABS moulded plastic to reduce weight, corrosion & to increase ventilation
- For pools from 3,000 litres to 300,000 litres
- Options available:
  - With or without Timer
  - Cell Sizes: 15, 21 & 30 Amp

<table>
<thead>
<tr>
<th>Model</th>
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Salt-Water Chlorination Systems

Salt-water Chlorination systems for swimming pools using the latest in switch-mode technology & self-cleaning serial cells.

- Simple to Install
- Easy to Use
- For pools from 3,000 litres to 300,000 litres
- Designed to operate with salt levels between 3,000ppm & 35,000ppm (Sea-water)
- Available units in different sizes: 15g, 22g & 33g

**Own Branding Opportunities Available.**

<table>
<thead>
<tr>
<th>Model</th>
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Domestic Fresh-Water Chlorination Systems

Salt-Water Chlorination Systems

Salt-water Chlorination systems for swimming pools using the latest in switch-mode technology & self-cleaning serial cells.

• Simple to Install
• Easy to Use
• For pools from 3,000 litres to 300,000 litres
• Designed to operate with 1000 TDS to 2000 TDS (Ideal conditions at 1500 TDS)
• Available units in different sizes: 15g, 22g & 33g

<table>
<thead>
<tr>
<th>Model</th>
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</tr>
<tr>
<td>AF22T</td>
<td>22</td>
<td>43 x 27 x 14</td>
<td>4.2</td>
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</table>
NEW Saltmaster Model
or “Your Brand Name”

Available with or without timer

Available for Salt-Water Pools & Fresh-Water Pools
(TDS from 750ppm – 1500ppm)
... and of course you can use it in Magnesium Pools
(replacement for Magnapool)

Model Part Numbers

S□□□□□2SC□□□

Brand Initials
SM- Saltmaster or “… - "Your own Brand Initials"

Specified TDS/Salt Content Options
Clear - Normal Salt Content (~3000ppm+)
M - Magnesium (~3000ppm+)
F - Freshwater
(TDS from 750ppm to 1500ppm)

Cell Production Size Options
15 or 4P - 15gm
21 or 6P - 21gm
30 or 7P - 30gm
40 or 9P - 40gm
(Normal Salt content Only)

Timer Option
Clear - No Timer
T - Timer
Aqualine Blue Chlorination Systems

Designed to cater to the above ground pool market, this system utilizes the E4aqua™ Saltwater Chlorination system to eliminate possible issues with corrosion. E4aquaTM™ is designed to run with very low salt levels (≈1 gram/litre) in pools up to 55,000 litres.

E4aqua™ Patent Pending

Aqualine Blue Installation Options

This cell design utilizes natural convection to promote flow through the cell...

NO PUMP REQUIRED!!

Options #1: Easy Installation

Just place the cell over the side of the pool & secure the power supply to the wall. Ideal for small above ground pools.

Options #2: Permanent

Permanently plumb into the pool & secure the power supply to the wall. Ideal for larger above ground pools.

<table>
<thead>
<tr>
<th>Model</th>
<th>gm/Hr</th>
<th>Packaging (cm)</th>
<th>Weight (Kg)</th>
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<tr>
<td>ALB15</td>
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</table>
E4aqua™ in conjunction with Aqualine Blue Salt water Chlorination system is the perfect solution for above ground pools

E4aqua™ has been shown to create a perfect balance between making a friendly environment for the above ground pool while still being able to easily chlorinate the water. E4aqua™ has been shown to be by far the best means of countering corrosion issues when compared with traditional chemical treatments showing, “after the completion of 1000 hours of salt fog prohesion testing... little if any coating disbondment initiation”. **

Implementing this simple system couldn’t be easier... Setting up a pool for the first time, just add each of the chemicals all at once, in the right proportions (see table). Maintain the salt level at 1 gm/Litre, which can be checked either with sodium chloride strips, or measuring conductivity with a conductivity / TDS instrument.

When the salt level is in line, the conductivity level will let you know if you need to add the other chemical components.

If it rains, which adds fresh water... you may need to check & add Sodium Bicarbonate & Sodium Bisulfate. With significant rain... you may need to add all the components in the correct ratio. Like all pools it is recommended to maintain pH between 7.2 & 7.6.

** To Verify our product E4aqua™ has been tested by Det Norske Veritas AS (www.dnv.com), testing traditionally used materials for above ground pools, such as Hot dipped galvanized steel wall panels & top plates, etc. E4aqua™ was compared against normal chlorination systems.

E4aqua™ Patent Pending

<table>
<thead>
<tr>
<th>E4aqua™ mix per 1000 litres (1m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Components</td>
</tr>
<tr>
<td>NaHCO₃, Sodium Bi-Carbonate</td>
</tr>
<tr>
<td>NaHSO₄, Sodium Bi-Sulfate</td>
</tr>
<tr>
<td>NaCl, Sodium Chloride (Pool Salt)</td>
</tr>
<tr>
<td>CYA, Cyanuric Acid (Stabilizer)</td>
</tr>
</tbody>
</table>
NEW
...Aqualine SOLAR

The cost of using a chlorinator comes mainly with having to run the filtration pump for 6 to 12 hours a day.

This new product aims to eliminate as much of the costs as possible by using a cell designed to utilise natural convection to promote flow through the cell...

**NO PUMP REQUIRED!!**

The cell for this product also lends itself to being powered by a SOLAR panel... allowing it to run for as long as the sun shines.

Optional backup power also available.

**THE RESULT...** This system eliminates the need to run the filtration system for long periods, allowing the owner to run it only for the minimum time required...

• THIS can be up to 70% savings in filtration pump running time!!

• NO BIG costs for purchasing & installing alternatives like variable speed pumps or similar systems!!
pH & ORP Controllers & Chemical Dosers

- Easy to program
- Ensures accurate dosing
- Configurable to pool size

Available with Peristaltic or Pulse Pumps
Peristaltic pump capacity = 3 litres per hour
Pulse pump capacity = 5 litres per hour

Chlorinator Controllers
- Uses an ORP probe to monitor chlorine levels & managing the chlorinator ON time to maintain required level
- Configurable to pool size & bather load

<table>
<thead>
<tr>
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<th>Packaging (cm)</th>
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</tr>
<tr>
<td>SSMORP2</td>
<td>42 x 27 x 14</td>
<td>3.1</td>
</tr>
</tbody>
</table>
Aqualine Chlorine Controller  (AQCL2)

- This new product has the capacity to fully measure & control Flow, Temperature, pH & Chlorine
- The sensor apparatus is setup as a bypass system with inlet/outlet valves, inlet filters & a sampling point
- The Chlorine sensor is SELF-Cleaning
- Optional features are a RS485 interface & up to 4x 0/4-20mA Control Outputs
- The controller is IP65 rated
- Controller also is available as a Chlorine only Controller

**Technical Data**

**measuring parameter**
free Chlorine 0.00..4.00 mg/l Cl₂

**input characteristics**
temperature measuring range -30..+140°C
flow monitoring Flow monitor with integrated Pt 100

max. pressure 6 bar (at 20°C)
flow ~ 30..200 L/h
ambient temperature 0..50 °C
pH-range 6..8 pH
min. conductivity 200 μS/cm

**output characteristics**
output signal 0/4..20 mA (scaleable, galvanically isolated)
load Max. 500Ohm
registration range adjustable within measuring range
serial interface RS 485
baud rate 9600
data format 8 bit

**power supply**
line voltage 24/117/230VAC, +6/-10%, 40..60Hz
power consumption 10VA

**ambient conditions**
ambient temperature operation 0..+50°C, storage -20..+65°C
relative humidity exception sensors 0..30°C
protection class wall mounted housing IP65

**controller**
control response on/off controller (adjustable hysteresis)
P/PI controller (pulse-pause, pulse-frequency or continuous output)
relays 2 relays each with potential-free NO contact, max. 250V, 6A, 550VA
1 alarm relay each with potential-free NO/CO contact, max. 250V, 6A, 550VA
onset delay 0.200 sec until controller active
digital input controller stop via external contact

**certificates and approvals**
Declaration of conformity: The product meets the requirements of the harmonized European standards. It thus complies with the legal requirements of the EC directives. The manufacturer confirms successful testing of the product by affixing the CE symbol.
**Description**

BECSys5 water chemistry controls provide continuous monitoring and control of sanitizers, oxidizers, pH, conductivity, turbidity, enzyme feed, system flow rate, system pressures, chemical inventory levels, and surge tank levels. Patent-pending VFD control technology and Total Dynamic Head monitoring assures optimal and efficient circulation pump operation. Indoor facilities will benefit from the BECSys5's ability to monitor combined chlorine levels.

Email and Text Message Alarm Notifications are supported by the standard integral 100BaseT Ethernet connection, and integration with Wi-Fi networks is supported with the optional BECSys Wi-Fi module. All inputs and system events are recorded in on-board data logs, accessible with BECSys for Windows Windows7-compatible PC software, which is included with every BECSys5.

Advanced safety features and multi-level security are standard. Every BECSys5 comes complete with pH, ORP, temperature sensors, flow switch, machined flow cell, and factory-trained start-up and support provided by local distribution.

**Features**

**System Inputs**
- All system inputs feature high/low alarm settings, and are recorded in integral data logs.
- BECSys pH sensor featuring inorganic electrolyte for extended sensor life
- BECSys ORP sensor featuring inorganic electrolyte and solid platinum (or gold) sensing element
- RTD temperature sensor
- Optional flow rate sensor
- Optional free chlorine sensor
- Optional combined chlorine system
  - Includes total chlorine and free chlorine sensors, with high and low alarm settings
  - Derives combined chlorine, with high alarm setting, from total chlorine and free chlorine readings
  - Values recorded in internal data logs
  - Control options include UV turndown feature and interface to air handling systems
- Optional conductivity sensor used to measure Total Dissolved Solids (TDS)
- Up to four configurable 4-20mA inputs (or two with conductivity sensor) used for measuring:
  - Turbidity
  - pH Liquid Chemical Inventory
  - Strainer Vacuum
  - Pump Effluent Pressure
  - Chlorine Liquid Chemical Inventory
  - Surge Tank Level
  - Filter Influent Pressure
  - Filter Effluent Pressure
  - Backwash Tank Level

**User Interface**
- 14 line x 40 character backlit LCD, with front-panel contrast adjustment and automatic temperature compensation
- Single-touch access to Set Points, Relay Modes, Calibrations, Menu access, and Reset Fail/Safes
- Optional BECSys Control Supervisor 8.4” color touch-screen display

**Regulatory Approvals/Certifications**
- NSF: NSF Certified and Listed to NSF/ANSI Standard 50
- USA: ETL Listed ANSI/UL 61010-1
- Canada: ETL Listed CAN/CSA C22.2 #61010-1
- Europe/CE: CENELEC EN 61010-1
  - European Community Low Voltage Directive 73/23/EEC
- Electromagnetic compatibility
  - FCC part 15 sub part B: Radio frequency devices, unintentional radiators
  - EN 61326: EMC requirements for measurement and control equipment
  - European Community EMC Directive 89/336/EEC
Water Chemistry Control Functions
- pH: Configurable for feed-up, feed-down, or dual feed, and either ON/OFF or Time-Based Proportional feed.
- Sanitizer: Based on ORP input, free chlorine input, or bracketed combination of the two
- Sanitizer Booster: Selectable trigger setpoint and separate ending set point.
- Ozone: Feed-up based upon ORP and/or ppm set points, Fireman Cycle feature and Energy Conservation mode.
- Superchlorination: Manually-triggered feed-up superchlorination set point, based upon ORP or ppm.
- Dechlorination: Feed-down control of dechlorination agent, either manually-triggered or automatic upon superchlorination completion
- LSI & RSI: Langelier Saturation Index and Ryzner Saturation Index, computed based upon current inputs and Ca Hardness and Alkalinity entered by operator.

Energy Conservation Control Functions
- Alternate Setpoints: Run the pool at less demanding levels during periods of low usage.
- Energy Conservation Mode: Program a “Sleep” mode which disable all mechanical and chemical functions during off-hours, “waking” periodically to keep water quality in check.

Expanded Control Functions
- UV (Combined Chlorine) Control: Programmable combined chlorine set point; BECSys5 will activate a relay to turn down UV system when combined reading is below set point.
- Flow: Display and log System Flow, maintaining Total Flow Volume; Low Flow alarm can disable chemical feeds.
- Heater: On/off control of heater with Fireman Cycle feature and Energy Conservation mode.
- TDS: Feed-down control of drain valve, with programmable fail-safe timer.
- Enzyme: Programmable daily timed feed with start and end time, feed duration, and multiple feeds per day.
- Turbidity: Feed-down control of polymer to maintain programmable turbidity set point.
- Liquid Chemical Inventory: monitor, display and data log chemical inventories with low alarm settings
- Surge Tank monitoring: monitor, display and data log surge tank level
- Autofill: control water makeup valve to maintain pool level setpoint based upon surge tank (or equivalent) level, with an overfill delay feature and programmable alternate set point.
- Sensor wash: programmable sensor wash with start and end time, feed duration, and multiple cycles per day.
- Backwash link: BECSys5 can be linked to a BECSysBW via Ethernet to share recirculation pump control information, fireman switch delays and backwash state.

Main Recirculation Pump Control Functions
- On/Off Control: Based upon various sensors and settings such as Low surge tank level, strainer high vacuum, Energy Conservation mode, Emergency Off, and Fireman Switch settings.
- TDH: Monitor pump Total Dynamic Head (TDH) with user settable high/low alarm settings.
- VFD: Variable Frequency Drive interface to control recirculation pump drive level to maintain flow rate, effluent pressure, or fixed setting. Four Manually-triggered and Four Scheduled alternate profiles are user programmable.

Control Outputs
- Solid-State Relays: Four (4) standard solid-state relay outputs
- Additional Relays: Fifteen (15) additional solid-state relay or mechanical outputs with addition of up to 3 BECSys SRX or MRX relay expansion modules
- 4-20mA Outputs: Four (4) optional separately isolated 4-20mA analog outputs, which can be configured to record any enabled input, or for VFD control of recirculation pump.

Safety Features
- High/Low Alarm Settings & Control Lockouts: Programmable high and low alarm settings for all inputs, and programmable lockout of sanitizer feed upon pH high or low alarm.
- No Flow Alarm & Flow Restored Delay: Assures sensors are monitoring an actively circulating water stream, with programmable control lockout following no-flow conditions.
- Feed Limit Alarms: Programmable fail-safes to prevent overfeeds due to equipment or systems failures.
- Emergency Off: Front-panel Emergency Off button immediately halts all chemical feeds and control outputs; can be password protected.
- Internal Safety Shield: Prevents access to high voltage circuitry or wiring during fuse replacement.
**System Security**
- Three levels of security access codes – Operator (6), Manager (2), and Rep (1)
- Data logs record history of access identified by user

**Data-Logging**
- Data logs maintained in battery protected RAM
- Log up to 10 to 56 days of input level history (every 2 to 10 minutes)
- Log up to 1100 system events over a maximum of 14 days (for example, feed cycles or alarms)

**Remote Access and Alarm Notification**
- BECSys for Windows™ 7 compatible PC software package included
- 100 BaseT Ethernet (standard): supports Email and Text message alarm notifications
- Wi-Fi compatibility with optional BECSys Wi-Fi module
- Optional MODBUS TCP/IP interface, operates concurrently with BECSys for Windows
- Optional 56k data/fax modem: supports Fax and Numeric Pager alarm notifications

**Warranty**
- 5 years electronics; 2 years pH, ORP and temperature sensors; 1 year optional sensors and flow cell
**Description**

The BECSysRCM provides PC access via Ethernet, USB and/or modem to one or more BECSys3 and/or BECSys2 controllers (up to 32) at one site. Full duplex, two-way communications support password-protected parameter changes. Wireless connection to existing Wi-Fi networks is provided through the optional BECSys Wi-Fi module. Data Logs are maintained for all connected BECSys3s and BECSys2s, with access provided through BECSys for Windows PC software. A dedicated USB port provides data log download to a Flash Drive, which can be imported into BECSys for Windows for storage and analysis. The BECSysRCM also performs electronic Alarm Notification for connected BECSys3s and BECSys2s via Email, Text Message, Fax and/or Numeric Pager.

**Features**

**Standard**

- **Ethernet**
  - CAT5e connection to private LAN
  - All PCs on the LAN have full access to the BECSysRCM and connected BECSys3s and BECSys2s
  - Off-site PCs also can have full access to the BECSysRCM and connected BECSys3s and BECSys2s through secure Internet access techniques outlined in the Ethernet Application Note ENG-4604-DOC
  - Email and Text Message alarm notifications
- **PC (Dedicated USB connection to PC)**
  - Used for initial configuration of BECSysRCM
  - Can also be used for a direct connection to PC (permanently or temporarily) for full access
- **Flash Drive (dedicated USB port for Flash Drive)**
  - Used to download data logs to a USB Flash Drive for import into BECSys for Windows for storage and analysis
- **RS485**
  - Digital error-corrected connection to BECSys3s and BECSys2s
  - Up to 32 BECSys3s or BECSys2s can be connected to a single BECSysRCM
- **BECSys for Windows PC software**
- **110 VAC Wall power supply (220VAC optional with European plug)**

**Optional**

- **56k data/fax modem**
  - Connection to phone line for remote PC Dial-in using BECSys for Windows
  - Provides full access to the BECSysRCM and connected BECSys3s and BECSys2s
  - Fax and numeric pager alarm notifications
- **Wi-Fi Compatible**
  - Optional BECSys Wi-Fi Module provides reliable connection to existing Wi-Fi networks
- **Wall-mount bracket kit**
- **220 VAC wall power supply with European plug**

**Warranty**

- **5 year warranty**
Operational Modes

Parameter Monitor/Modification
- Password protected access to the individual parameters of all connected BECSys3s and BECSys2s
- Access provided with BECSys for Windows software
  - Operator’s Console – provides a full graphical view of system status; parameters can be changed by double-clicking on the desired feature
  - Menu Tree – full Explorer-style interface to all system parameters
- See “BECSys for Windows Data Sheet” Document #ENG-4377-DOC for full capabilities

Data-Logging
- Provides data logging capabilities for up to 32 BECSys3 or BECSys2 controllers
- 99 days of Data Logs are maintained on BECSysRCM
  - All inputs (pH, ORP, temperature) recorded for every connected BECSys3 and BECSys2 every minute
  - 1000 System Events (alarms, control outputs, parameter changes, etc.) per day

USB Flash Drive Download
- This feature provides a simple method for retrieving data logs onto a USB flash Drive for upload into BECSys for Windows
  - When a Flash Drive is inserted in the “Flash Drive” USB port, the BECSysRCM automatically transfers data logs for all connected BECSys2s and BECSys3s onto the Flash Drive
  - During transfer the “Flash Activity” LED will blink.
  - When transfer is complete, the “Success” LED will illuminate indicating to the user that the Flash Drive should be removed.
  - (If all Data Logs were not able to be transferred to the Flash Drive, the “Error” LED will illuminate.)
- Each transfer to Flash Drive creates a single data log file
  - Data Logs for all connected BECSys3s and BECSys2s are stored in this file
  - Each Data log is identified by unique system Serial Number
  - Import into BECSys for Windows synchronizes each data log with it’s entry in the Site Database using the Serial Number
  - After import, data logs are available for analysis using the extensive Graphing capabilities of BECSys for Windows
- Especially useful for:
  - Sites that do not have an Ethernet/LAN or phone line available
  - Service/Diagnostic personnel can easily retrieve logs for analysis, without needing to bring a laptop on-site

Electronic Alarm Notification
- The BECSysRCM performs electronic Alarm Notification for all connected BECSys3s and BECSys2s
- Alarm Notification types depend upon connections present
  - Email & Text Message (requires Ethernet connection with DNS and SMTP server)
  - Fax & Numeric Pager (requires Modem connected to analog phone line)
- Up to 8 recipients can be independently configured for any one of the electronic alarm notifications
- Email, Text Message and Fax alarm notifications will include Customer Name, Location, System Type, Serial Number and System ID as programmed into the BECSysRCM, as well as a listing of all active alarms including date and time each was triggered.
- Email and Fax alarm notifications also include a status report with key inputs, set points and alarm points.
- See “Alarm Notification Application Note” Document #ENG-4588-DOC for full details on Alarm Notification capabilities.
System Configuration

Sample Configuration with BECSysRCM
(See Ethernet Application Note ENG-4604-DOC for full specification on Ethernet connectivity.)

Ethernet / Local Area Network (LAN)

Internet

Firewall

One or more Local PCs

Optional Modem

One or more Remote PCs

RS485

RS485

RS485

Up to 32 BECSys3s or BECSys2s

Feature Identification

Modem
Connection to analog phone line (optional)

RS485
Connects up to 32 BECSys3s or BECSys2s

Power
110VAC or 220VAC
Power Supply included

Ethernet
Local Area Network or BECSys Wi-Fi Module

PC
Dedicated USB PC connection

Flash Drive
USB Port for Data Log transfer to Flash Drive
Description

The BECSys Float Switch Assembly features a simple and rugged float switch to sense the liquid level of various aqueous substances. Applications include chemical inventory, surge tank and backwash tank monitoring. This system senses whether liquid is present at a particular, single point in the vessel; to monitor multiple points in the vessel, multiple Float Switch Assemblies should be used.

The Float Switch is an all-PVDF construction. Wetted materials comply with FDA food contact regulations. NSF materials are Standard 61 compliant.

The assembly is designed to provide flexible field installation in either indoor or outdoor applications. Both threaded and unthreaded ½” PVC caps are provided for easy connection to field-supplied PVC pipe.

Features

- Reliable and cost-effective
- Easy to install; includes both threaded and unthreaded ½” caps for connection to field-supplied ½” PVC pipe for threaded or glued applications
- Connects directly to BECSys5, BECSys7 and BECSysBW
- Indoor and Outdoor mounting configurations supported

Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Float Assembly Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1210115</td>
<td></td>
</tr>
</tbody>
</table>

**Physical**

- Float, Stem and Mounting Material: PVDF
- ½” Cap: PVC
- Float Diameter: 1”

**Electrical**

- Switch Rating: SPST, 20VA (Pilot Duty), 120VAC – 240VAC
- Electrical Termination: Tellon Jacketed Lead Wires

**Performance**

- Actuation Level (for 1.0 liquid specific gravity): ½”
- Minimum Liquid Specific Gravity: 0.86
- Maximum Pressure @ 70°F: 50 psi (3 bar)
- Operating Temperature: -40°F to +250°F

(PVC pipe not included)
Liquitron™ DC4000 Series Conductivity Controller

Applications

• Cooling Tower
• Boiler
• Closed Loop Systems

The DC4000 Series Conductivity Controller is a microprocessor based control system that will operate in a variety of water treatment applications.

The DC4000 provides a set point and relay for conductivity control, and a variety of timer functions to control chemical addition.

Programming this controller is simple and is accomplished using only three keys.

The backlit LCD display and LEDs provide visual indication of operating conditions and equipment status.

Features

• 0–20,000 μS or Selectable PPM/TDS Ratio
• High and Low Alarm with Relay
• Temperature Display in °C or °F
• 4 – 20 mA Recorder Output (Standard)
• Flow Switch Compatible
• Backlit LCD Alpha / Numeric Display
• UL and CUL Certified
• CE Approval (optional)

Feed Modes

Feed Limit (Feed and Bleed)
1-999 minutes

Percentage of Time (Reset)
1–100 minute cycle
1–100% on-time

Percentage of Control (Feed after Bleed)
1–100% of previous bleed cycle
1-999 minute limit

External Trigger (Pulse)
1–999 seconds on-time
1–100 counter

Can be special ordered with CE Approval
Material (cover)
Clear molded polycarbonate, padlockable

Environment
32° F to 122° F (0° C to 50° C)
0 to 95% (non-condensing) relative humidity

230 VAC, 50/60 Hz units provided with 6 ft (2 m) grounded power cord and plug, and throughput connectors for hardwire connection of controlled devices.

Dimensions

Electrical

**Input**
115 VAC, 50/60 Hz or
230 VAC, 50/60 Hz

**Control Output**
Two (2) relays, 10 Amp @ 115 VAC, 5A @ 230 VAC
Unit fused for 10 Amp total load.

**Signal Input**
Two (2) PG-9 throughput connectors are provided for connection of flow meter and flow switch. A 4-pin microphone jack is provided for conductivity.

**Signal Output**
4-20 mA spannable output for conductivity (non-isolated).

Operational

**Display**
16 Character backlit LCD

**Conductivity Scale**
0–20,000 μS or 0–6600 PPM/TDS

**LED Indicators**
Power, control, alarm, no flow and feed

**Differential (hysteresis)**
Keypad adjustable

**Feed Timers (selectable)**
- Pulse: 1–999 seconds run-time, 1–100 counts
- % of Time: 1–100 minute cycle, 1–100% on-time
- Limit: 1–999 minute run time
- % of Bleed: 1–100% of previous bleed
- 1–999 minute limit

**Set Point**
Rising or falling (selectable)

**Boiler Timer**
Interval: 1–999 minutes
Duration: 1–999 seconds
Trap Time: 1–999 seconds
Chlorination Systems or On-Site Chlorine Generators

- Individually designed for pools from 300,000 litres to 300,000,000 litres or more
- Modular in design - each cell can produce 250gms of Sodium-Hydrochloride per Hour
- Unique moulded cell-housings to ensure quality & ease of maintenance
- Can be designed for in-line or off-line applications for swimming pools or industrial water treatment
- Major cost benefits - Never buy Chlorine again
  Save up to 80% of chemical costs over 5 years

FRESH-WATER VERSIONS ALSO AVAILABLE

Easy Maintenance
- Remove & replace cell in 2 minutes

Full installation showing Control Panel & Semi-Automatic Acid Cleaning system

As used in seal habitat at Underwater World, Australia.
## Commercial Chlorination Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>No. of Cells</th>
<th>Production (gm/Hr)</th>
<th>Power Consumption (W)</th>
<th>Primary AC Current (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM250</td>
<td>1</td>
<td>250</td>
<td>1200</td>
<td>5</td>
</tr>
<tr>
<td>SM500</td>
<td>2</td>
<td>500</td>
<td>2400</td>
<td>10</td>
</tr>
<tr>
<td>SM750</td>
<td>3</td>
<td>750</td>
<td>3600</td>
<td>15</td>
</tr>
<tr>
<td>SM1000</td>
<td>4</td>
<td>1000</td>
<td>4800</td>
<td>20</td>
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<tr>
<td>SM1500</td>
<td>6</td>
<td>1500</td>
<td>6000</td>
<td>30</td>
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<tr>
<td>SM2000</td>
<td>8</td>
<td>2000</td>
<td>9600</td>
<td>40</td>
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<td>SM3000</td>
<td>12</td>
<td>3000</td>
<td>14400</td>
<td>60</td>
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<td>SM4000</td>
<td>16</td>
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<td>SM5000</td>
<td>20</td>
<td>5000</td>
<td>24000</td>
<td>100</td>
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</table>

Larger units available on request

---

## Commercial Fresh Water Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>No. of Cells</th>
<th>Production (gm/Hr)</th>
<th>Power Consumption (W)*</th>
<th>Primary AC Current (A)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMF125</td>
<td>1</td>
<td>125</td>
<td>600</td>
<td>2.5</td>
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<tr>
<td>SMF250</td>
<td>2</td>
<td>250</td>
<td>1200</td>
<td>5</td>
</tr>
<tr>
<td>SMF375</td>
<td>3</td>
<td>375</td>
<td>1800</td>
<td>7.5</td>
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<tr>
<td>SMF500</td>
<td>4</td>
<td>500</td>
<td>2400</td>
<td>10</td>
</tr>
<tr>
<td>SMF750</td>
<td>6</td>
<td>750</td>
<td>3600</td>
<td>15</td>
</tr>
<tr>
<td>SMF1000</td>
<td>8</td>
<td>1000</td>
<td>4800</td>
<td>20</td>
</tr>
</tbody>
</table>

Larger units available on request

---

* Power supply can be either single phase or 3-phase to suit installation and specific system being installed

** Total current used
Small Commercial Salt-Water Chlorination Systems (50 - 120gm/hr). Available in a variety of sizes & options to cater to all customer needs...

- Wall mounted or Stand-alone
- Self-Cleaning
- Output Current Controlled
- Conventional systems normally designed to run at 3000 – 4000 ppm salt concentrations
- Systems designed for Sea water (35,000ppm) are also available.

**FRESH-WATER VERSIONS ALSO AVAILABLE**

- These Fresh Water systems are designed to run between 1000 & 2000 TDS (optimized for 1500 TDS)

<table>
<thead>
<tr>
<th>Model</th>
<th>gm/Hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM50</td>
<td>50</td>
</tr>
<tr>
<td>SM100</td>
<td>100</td>
</tr>
<tr>
<td>SM120</td>
<td>120</td>
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</table>
Replacement Cells - Standard & R.P. Models

Salt Water Cells - Standard

Salt Water Cells - Reversible

Replacement Serial Cells - Standard & Reversible
## Replacement Serial Cells - Standard & Reversible

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Capacity g/Hr</th>
<th>Standard</th>
<th>R.P.</th>
<th>Diagram reference</th>
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<tbody>
<tr>
<td>MCOU900</td>
<td>10</td>
<td>✓</td>
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<td>page 27, 1</td>
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<td>MCOU1500</td>
<td>15</td>
<td>✓</td>
<td></td>
<td>page 27, 2</td>
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<tr>
<td>MCOU2000</td>
<td>20</td>
<td>✓</td>
<td></td>
<td>page 27, 3</td>
</tr>
<tr>
<td>MCOU3000</td>
<td>30</td>
<td>✓</td>
<td></td>
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<td>MCOU4000</td>
<td>40</td>
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<td></td>
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</tr>
<tr>
<td>MCO4PC</td>
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<td>page 27, 7</td>
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<td>21</td>
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<td>✓</td>
<td>page 27, 8</td>
</tr>
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<td>MCO7P</td>
<td>30</td>
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<td>✓</td>
<td>page 27, 9</td>
</tr>
<tr>
<td>MCO9P</td>
<td>40</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
<td>MCO11P</td>
<td>50</td>
<td>✓</td>
<td>✓</td>
<td>page 27, 11</td>
</tr>
<tr>
<td>MCSS15</td>
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<td></td>
<td>page 27, 12</td>
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<td>MCSS22</td>
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<td>✓</td>
<td></td>
<td>page 27, 13</td>
</tr>
<tr>
<td>MCSR15</td>
<td>15</td>
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<td>page 28, 17</td>
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<td>MCSNR22</td>
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<td>page 28, 18</td>
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<td>MCSNR33</td>
<td>33</td>
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Fresh Water Replacement Cells - Standard & Reversible

Replacement Fresh-Water Cells - Original

Replacement Fresh-Water Cells - Serial

<table>
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<tr>
<th>Part No.</th>
<th>Capacity g/Hr</th>
<th>Standard</th>
<th>Reversible</th>
<th>Diagram reference</th>
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<tr>
<td>MCOF5P15</td>
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<td>✓</td>
<td>page 29, 20</td>
</tr>
<tr>
<td>MCOF7P21</td>
<td>21</td>
<td></td>
<td>✓</td>
<td>page 29, 21</td>
</tr>
<tr>
<td>MCOF7P33</td>
<td>33</td>
<td></td>
<td>✓</td>
<td>page 29, 22</td>
</tr>
<tr>
<td>MCOF13P50</td>
<td>50</td>
<td></td>
<td>✓</td>
<td>page 29, 23</td>
</tr>
<tr>
<td>MCSRF15</td>
<td>15</td>
<td></td>
<td>✓</td>
<td>page 29, 24</td>
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<td>MCSRF22</td>
<td>22</td>
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<td>✓</td>
<td>page 29, 25</td>
</tr>
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<td>MCSNRF15</td>
<td>15</td>
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<td>✓</td>
<td>page 29, 26</td>
</tr>
<tr>
<td>MCSNRF22</td>
<td>22</td>
<td></td>
<td>✓</td>
<td>page 29, 27</td>
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</table>
Cell Accessories

• Original Type 1 Cell

• Type 2 Cell

• Serial Cell
<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Diagram reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCBUS1</td>
<td>Cell Bushes Europe</td>
<td>page 30, 2</td>
</tr>
<tr>
<td>BCBUS2</td>
<td>Cell Bushes Australian</td>
<td>page 30, 2</td>
</tr>
<tr>
<td>BCBUS3</td>
<td>Cell Bushes Blank Off</td>
<td>page 30, 2</td>
</tr>
<tr>
<td>BCHOU1</td>
<td>Cell Housing</td>
<td>page 30, 1</td>
</tr>
<tr>
<td>BCHOU1CL1</td>
<td>Cell Clips Original</td>
<td>page 30, 6</td>
</tr>
<tr>
<td>BCHOU1CL2</td>
<td>Cell Clips 4mm Blue</td>
<td>page 30, 7</td>
</tr>
<tr>
<td>BCHOU1CL3</td>
<td>Cell Clips 4mm Grey</td>
<td>page 30, 7</td>
</tr>
<tr>
<td>BCHOU1CL4</td>
<td>Cell Clips 4mm Blue Large</td>
<td>page 30, 8</td>
</tr>
<tr>
<td>BCHOU1OR1</td>
<td>Cell O-Ring</td>
<td>page 30, 3</td>
</tr>
<tr>
<td>BCHOU1H1</td>
<td>Cell Head Black (Type 1)</td>
<td>page 30, 5</td>
</tr>
<tr>
<td>BCHOU1H2</td>
<td>Cell Head Blue (Type 1)</td>
<td>page 30, 5</td>
</tr>
<tr>
<td>BCHOU1H3</td>
<td>Cell Head Grey (Type 1)</td>
<td>page 30, 5</td>
</tr>
<tr>
<td>BCHOU1L1</td>
<td>Cell Lid Black (Type 1)</td>
<td>page 30, 4</td>
</tr>
<tr>
<td>BCHOU1L2</td>
<td>Cell Lid Blue (Type 1)</td>
<td>page 30, 4</td>
</tr>
<tr>
<td>BCHOU1L3</td>
<td>Cell Lid Grey (Type 1)</td>
<td>page 30, 4</td>
</tr>
<tr>
<td>BCHOU2</td>
<td>Squ Right Angle Cell Housing</td>
<td>page 30, 9</td>
</tr>
<tr>
<td>BCHOU6H1</td>
<td>Cell Head Blue (Type 2)</td>
<td>page 30, 10</td>
</tr>
<tr>
<td>BCHOU6L1</td>
<td>Cell Lid Blue (Type 2)</td>
<td>page 30, 10</td>
</tr>
<tr>
<td>MHOU3ABA</td>
<td>Serial Adaptor Clamp Assembly</td>
<td>page 30, 15a,b,c,d</td>
</tr>
<tr>
<td>BCHOU3N</td>
<td>Serial Cell Nut</td>
<td>page 30, 14</td>
</tr>
<tr>
<td>BCHOU3OR1</td>
<td>Serial Cell O-Ring</td>
<td>page 30, 12</td>
</tr>
<tr>
<td>BCHOU3P</td>
<td>Serial Cell Tail</td>
<td>page 30, 13</td>
</tr>
<tr>
<td>BCHOUS4</td>
<td>Type 2 Serial Cell Housing</td>
<td>page 31, 16</td>
</tr>
<tr>
<td>BCHOUS4N</td>
<td>Type 2 Serial Cell Housing Nut</td>
<td>page 31, 17</td>
</tr>
<tr>
<td>BCHOUS4OR1</td>
<td>Type 2 Serial Cell Housing O-Ring</td>
<td>page 31, 18</td>
</tr>
<tr>
<td>BCHOUS4OR2</td>
<td>Type 2 Serial Cell Terminal O-Ring</td>
<td>page 31, 19</td>
</tr>
<tr>
<td>BCHOUS4I</td>
<td>T Type 2 Serial Cell Insert</td>
<td>page 31, 20</td>
</tr>
<tr>
<td>BCHOUS4IM</td>
<td>Type 2 Serial Cell Mesh</td>
<td>page 31, 21</td>
</tr>
<tr>
<td>BCHOUS4T</td>
<td>Type 2 Serial Cell Terminal Nut</td>
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</table>
### Chemical Controller Accessories & Parts

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Diagram reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSAAD3/8X1/2</td>
<td>Adaptor 3/8x1/2</td>
<td>page 32, 1</td>
</tr>
<tr>
<td>BSAOWV1</td>
<td>One Way Value</td>
<td>page 32, 2</td>
</tr>
<tr>
<td>BSAOWV2</td>
<td>Heavy Duty One Way Value</td>
<td>page 32, 3</td>
</tr>
<tr>
<td>BSP01</td>
<td>PH Probe</td>
<td>page 32, 4</td>
</tr>
<tr>
<td>BSP02</td>
<td>ORP Probe</td>
<td>page 32, 5</td>
</tr>
<tr>
<td>BSP03</td>
<td>Chlorine Probe</td>
<td>page 32, 6</td>
</tr>
<tr>
<td>BSW1</td>
<td>Inlet Weight</td>
<td>page 32, 7</td>
</tr>
<tr>
<td>BSW2</td>
<td>Heavy Duty Inlet Weight</td>
<td>page 32, 8</td>
</tr>
<tr>
<td>MSPHC</td>
<td>Probeholder Complete</td>
<td>page 32, 9</td>
</tr>
<tr>
<td>MST12M</td>
<td>Tube Esdan Food LDPE 6x4mm - 2m Hard Inlet Tube</td>
<td>page 32, 10</td>
</tr>
<tr>
<td>MST2C</td>
<td>200mm Tube with Joiners - for Peristaltic Pump</td>
<td>page 32, 11</td>
</tr>
<tr>
<td>MST42M</td>
<td>Tube Clear Vinyl 6x4mm - 2m Soft Outlet Tube</td>
<td>page 32, 12</td>
</tr>
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</table>
Positive Displacement Pumps

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Diagram reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBP1</td>
<td>Peristaltic Pump 3L/Hr</td>
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</tr>
<tr>
<td>BBP2</td>
<td>Pulse Pump 5L/Hr</td>
<td>page 33, 13</td>
</tr>
<tr>
<td>BBP3</td>
<td>Large Pulse Pump 10-15L/Hr</td>
<td>page 33, 14</td>
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Chlorinator & Chemical Controller Replacement PCBs

<table>
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<tr>
<th>Part No.</th>
<th>Description</th>
<th>Diagram reference</th>
</tr>
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<tbody>
<tr>
<td>MEA1</td>
<td>Complete SMC Digital Chlor Ctrl</td>
<td>page 33, 15</td>
</tr>
<tr>
<td>MEA2</td>
<td>Complete SMC Normal Chlor Ctrl</td>
<td>page 33, 16</td>
</tr>
<tr>
<td>MEA3</td>
<td>Complete SMC Switchmode Ctrl</td>
<td>page 33, 17</td>
</tr>
<tr>
<td>MEA3B</td>
<td>Complete SMC Switchmode Main</td>
<td>page 33, 18</td>
</tr>
<tr>
<td>MEA4</td>
<td>Complete SMC PH Ctrl</td>
<td>page 33, 19</td>
</tr>
<tr>
<td>MEA5</td>
<td>Complete SMC PH Display</td>
<td>page 33, 20</td>
</tr>
<tr>
<td>MEA4B</td>
<td>Complete SMC ORP Ctrl</td>
<td>page 33, 21</td>
</tr>
<tr>
<td>MEA5B</td>
<td>Complete SMC ORP Display</td>
<td>page 33, 22</td>
</tr>
<tr>
<td>MEA6</td>
<td>Complete SMC AG Ctrl</td>
<td>page 33, 23</td>
</tr>
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<td>BBP1CPB</td>
<td>Pulse Pump Driver PCB</td>
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Magnetic Pumps - **MD Series**

- Magnetic drive circulating pumps are full sealed pumps where the shaft & impeller magnetically coupled to the motor eliminating the need for traditional shaft seal & therefore avoiding potential corrosion problems.

- These magnetic-driven cycle pumps are made from polypropylene & has an excellent performance to endure the corrosion from chemical liquids.

- Its applications are extensive... Chemical, Pharmaceutical, Electric plating, Photographic processing, Metal, Mineral, Food industries; Water treatment, Pollution Control among other applications.

- **Pump Construction**
  - Pump Body - Polypropylene GF20%
  - Motor - Aluminium bracket & Copper Windings
  - Bearing - NSK

- **0 – 80°C Operating Temperature**
Notes: