<table>
<thead>
<tr>
<th>TEST</th>
<th>IDEAL RANGE</th>
<th>ADJUSTMENT REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Chlorine</td>
<td>1.0 - 3.0 ppm</td>
<td>Turn output dial up to increase, down to decrease -OR- increase or decrease pump filtration time.</td>
</tr>
</tbody>
</table>
| pH               | 7.2 - 7.6       | Too high - add muriatic acid
Too low - add soda ash.                                          |
| Alkalinity       | 80 - 120 ppm    | Add baking soda to increase.
Add acid as required to decrease.                                  |
| Salt             | 2700 - 3400 ppm | Add salt as required to increase.                                                   |
| Stabilizer       | 60 - 80 ppm     | Add cyanuric acid to increase.                                                      |
| Calcium          | 200 - 400 ppm   | Add calcium to increase.
Drain and add water to decrease.                                    |
| Electrolytic Cell| inspect & clean | Refer to section in manual.                                                        |
IMPORTANT SAFETY INSTRUCTIONS

When using this electrical equipment, basic safety precautions should always be followed, including the following:

• READ AND FOLLOW ALL INSTRUCTIONS

• ⚠️ WARNING: Disconnect all AC power during installation.

• ⚠️ WARNING: Water in excess of 100 degrees Fahrenheit may be hazardous to your health.

• ⚠️ WARNING: To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

• A green colored terminal marked "Earth Ground" is located inside the wiring compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying the equipment.

• One bonding lug for US models (two for Canadian models) is provided on the external surface. To reduce the risk of electric shock, connect the local common bonding grid in the area of the swimming pool, spa, or hot tub to these terminals with an insulated or bare copper conductor not smaller than 8 AWG US / 6 AWG Canada.

• All field installed metal components such as rails, ladders, drains, or other similar hardware within 3 meters of the pool, spa or hot tub shall be bonded to the equipment grounding bus with copper conductors not smaller than 8 AWG US / 6 AWG Canada.

• SAVE THESE INSTRUCTIONS
## Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Overview</strong></td>
<td></td>
</tr>
<tr>
<td>Block Diagram</td>
<td>1</td>
</tr>
<tr>
<td>Automation</td>
<td>1</td>
</tr>
<tr>
<td>Chlorination</td>
<td>2</td>
</tr>
<tr>
<td>Default Display</td>
<td>2</td>
</tr>
<tr>
<td><strong>Manual System</strong></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td></td>
</tr>
<tr>
<td>Output Names</td>
<td>3</td>
</tr>
<tr>
<td>Filter Pump</td>
<td>3</td>
</tr>
<tr>
<td>Lights and Aux Outputs</td>
<td>4</td>
</tr>
<tr>
<td>Pool/Spa Valves</td>
<td>4</td>
</tr>
<tr>
<td>Heaters</td>
<td>5</td>
</tr>
<tr>
<td>System Off</td>
<td>5</td>
</tr>
<tr>
<td>Service</td>
<td>5</td>
</tr>
<tr>
<td><strong>Automatic System</strong></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td></td>
</tr>
<tr>
<td>Manual System</td>
<td></td>
</tr>
<tr>
<td>Output Names</td>
<td>3</td>
</tr>
<tr>
<td>Filter Pump</td>
<td>3</td>
</tr>
<tr>
<td>Lights and Aux Outputs</td>
<td>4</td>
</tr>
<tr>
<td>Pool/Spa Valves</td>
<td>4</td>
</tr>
<tr>
<td>Heaters</td>
<td>5</td>
</tr>
<tr>
<td>System Off</td>
<td>5</td>
</tr>
<tr>
<td>Service</td>
<td>5</td>
</tr>
<tr>
<td><strong>Quick “How To” Guide</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Chlorinator Operation/ Water Chemistry</strong></td>
<td></td>
</tr>
<tr>
<td>Saturation Index</td>
<td>33</td>
</tr>
<tr>
<td>Salt Level</td>
<td>34</td>
</tr>
<tr>
<td>Type of Salt</td>
<td>34</td>
</tr>
<tr>
<td>How to Add or Remove Salt</td>
<td>34</td>
</tr>
<tr>
<td><strong>System Maintenance</strong></td>
<td></td>
</tr>
<tr>
<td>Servicing and Cleaning the Aqua Logic Cell</td>
<td>37</td>
</tr>
<tr>
<td>Winterizing</td>
<td>37</td>
</tr>
<tr>
<td>Spring Startup</td>
<td>37</td>
</tr>
<tr>
<td><strong>Troubleshooting &amp; Diagnostic Information</strong></td>
<td></td>
</tr>
<tr>
<td>Service Mode</td>
<td>38</td>
</tr>
<tr>
<td>Check System Indicator</td>
<td>38</td>
</tr>
<tr>
<td>Diagnostic Menu</td>
<td>39</td>
</tr>
<tr>
<td>Chlorinator Diagnostics</td>
<td>39</td>
</tr>
<tr>
<td>Instant Salt</td>
<td>40</td>
</tr>
<tr>
<td>Flow Switch</td>
<td>40</td>
</tr>
<tr>
<td>Cell, Water, Air, Solar Temperature</td>
<td>40</td>
</tr>
<tr>
<td>Software Revision</td>
<td>40</td>
</tr>
<tr>
<td><strong>Warranty</strong></td>
<td></td>
</tr>
<tr>
<td>Aqua Logic Warranty</td>
<td>42</td>
</tr>
</tbody>
</table>
System Overview

The Aqua Logic is a multifunction pool controller used to fully manage your pool/spa system. The Aqua Logic can control pumps, valves, lighting, heaters, and chlorination. Although the Aqua Logic is easy to use, it is important to completely read through this operating manual before attempting to operate the control.

Automation

The AQL-PS-4 (-8, -16) can control up to 4 (8, 16) high voltage (120/240V) pieces of equipment, up to 4 (8 for the PS-16) automatic valve actuators, and 2 conventional heaters plus a solar heater. Both manual and automatic (programmed) operation are available. All of the control functions can be programmed at a display/keypad which is part of the main unit (typically located near the pool equipment) or at one or more remote display/keypads.

NOTE: This manual assumes that the Aqua Logic has been wired and configured according to the Installation Manual. Aspects of the Aqua Logic that pertain to system setup are not covered in this manual.

LIMITED WARRANTY Goldline warrants its Aqua Rite, Aqua Rite Pro, Aqua Trol, Aqua Logic and Pro Logic products (products with Goldline part numbers starting with AQ-RITE-, AQ-RT-PRO, AQ-TROL-, AQ-LOGIC-, AQL-P-, AQL-PS-, AQL-CL-, PL-P-, PL-PS-, and HPC-2) to be free from defects in material or workmanship, under normal use and service:

For three years from the date of the initial system installation on private, residential swimming pools within the USA or Canada:

1. Goldline will, at its option, either repair or replace the defective product and return it freight prepaid.

For commercial installations, installations outside the USA and Canada, and accessory products and replacement parts: If a product is defective in workmanship or materials and is removed and returned freight prepaid within one (1) year after the date of the initial system installation, Goldline will, at its option, either repair or replace the defective product and return it freight prepaid.

For residential installations in USA or Canada: If a product is defective in workmanship or materials and is removed and returned freight prepaid within three (3) years after the date of the initial system installation, Goldline will, at its option, either repair or replace the defective product and return it freight prepaid.

Contact any Goldline dealer or contact Goldline at 61 Whitecap Drive, North Kingstown, RI 02852 for warranty service. The costs incurred in removal and/or reinstallation of the product are NOT covered under this warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

WARRANTY EXCLUSIONS:

1. Material supplied or workmanship performed by others in process of installation.
2. Damage resulting from improper installation including installation on pools larger than the product rating.
3. Problems resulting from failure to operate the product(s) in accordance with the recommended instructions contained in product's owner's manual(s).
4. Problems resulting from failure to maintain pool water chemistry in accordance with the recommendations in the owner's manual(s).
5. Problems resulting from tampering, accident, abuse, negligence, unauthorized repairs or alternations, fire, flood, lightning, freezing, external water, degradation of natural stone used in or immediately adjacent to a pool or spa, war or acts of God.

DISCLAIMER: THE EXPRESS LIMITED WARRANTY ABOVE CONSTITUTES THE ENTIRE WARRANTY OF GOLDLINE WITH RESPECT TO ITS POOL AUTOMATION AND CHLORINATION PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. IN NO EVENT SHALL GOLDLINE BE RESPONSIBLE FOR ANY CONSEQUENTIAL, SPECIAL OR INCIDENTAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, PERSONAL INJURY, PROPERTY DAMAGE, DAMAGE TO OR LOSS OF EQUIPMENT, LOST PROFITS OR REVENUE, COSTS OF RENTING REPLACEMENTS, AND OTHER ADDITIONAL EXPENSES, EVEN IF THE SELLER HAD BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIABILITY OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

NO WHOLESALER, AGENT, DEALER, CONTRACTOR OR OTHER PERSON IS AUTHORIZED TO GIVE ANY WARRANTY ON BEHALF OF GOLDLINE.

THIS WARRANTY IS VOID IF THE PRODUCT HAS BEEN ALTERED IN ANY WAY AFTER LEAVING THE FACTORY.
Chlorination
With the use of the optional AQL-CL chlorination kit, the Aqua Logic is also an automatic chlorine generation system for pool and/or spa sanitization. If enabled (see Configuration Menu), this operation requires a low concentration of salt (sodium chloride) in the pool/spa water. The Aqua Logic automatically converts the salt into free chlorine which kills bacteria and algae in the pool/spa. Chlorine will revert back to sodium chloride after killing bacteria. These reactions will continuously recycle, virtually eliminating the need to add sanitizing chemicals to your pool/spa. The only time you may need to add more salt to the pool/spa is when water is replenished due to backwashing, draining, or splashing (not evaporation).

The Aqua Logic is designed to handle the purification needs of most residential swimming pools up to 40,000 gallons (150,000 liters), or the needs of most commercial pools up to 25,000 gallons (95,000 liters). Check local codes for other restrictions. The actual amount of chlorination required to properly sanitize a pool varies due to bather load, rainfall, temperature, and the pool’s cleanliness.

For pools larger than 40,000 gallons, the Aqua Logic can control one or more Goldline Aqua Rite chlorinators to supplement chlorine production.

NOTE: Before installing this product as part of a saline water purification system in a pool or spa using natural stone for coping or for immediately adjacent patios/decking, a qualified stone installation specialist should be consulted regarding the appropriate type, installation, sealant (if any) and maintenance of stone used around a saline pool with electronic chlorine generator in your particular location and circumstances.

Default Display
Turn power on at the main panel and turn the Aqua Logic control power circuit breaker on. The keypad will show the default display. The default display alternates between the day/time, air and pool (or spa) temperature, pool/spa sanitizer setting, and salt level. Under certain circumstances, additional displays may be added to the default menu to inform you about system operation. Refer to the Programming Menu Flowchart on page 7 to view all possible displays. The Aqua Logic will automatically scroll through all of the available default menu displays or you can press “<” or “>” to manually scroll.
Manual System Operation

While the main objective of the Aqua Logic is to automate the operation of your pool/spa system, there may be certain times when you want to operate the equipment manually. To operate the equipment manually, it is necessary to turn off the automatic operation and control the equipment manually. To turn off the automatic operation, press the “FILTER” button again.

Pressing the “FILTER” button again will turn off the pump. However, if there is a heater in the system, the “FILTER” button will flash and the display will indicate “Heater Cooldown”. At this point the filter pump will automatically turn off after 5 minutes of heater cooldown operation. If you want to override the heater cooldown operation, simply press the “FILTER” button again. When the filter pump is programmed to run from 9:00A to 5:00P daily, it will run continuously until the next day at 5:00P at which time it will turn off and follow the programmed automatic operation.

Output Names
The Aqua Logic is shipped from the factory with each output labeled with a generic name (e.g. Aux1, Valve3, etc.). One of the features in the software (see Configuration Menu, page 16) is that each output can be assigned a new name that is more descriptive of the equipment being controlled. This makes it much easier to operate all of the equipment on your pool without having to memorize what each output controls. Insert name labels are also provided to be placed next to each display pushbutton. Since there is no way to know how your particular system is configured, this manual will use the original generic names for each output.

Pool Filter Pump
The pool filter pump can be manually operated whether in Standard (single pump) or Dual Equipment (separate pumps for both pool and spa) mode. When in Standard mode, the display will refer to the pool filter pump as “FILTER”. When in Dual Equipment mode, the display will read “FILTER PUMP”.

Single Speed Filter Pump: If the pump is currently off, press the “FILTER” button to turn on the pump. Pressing the “FILTER” button again will turn off the pump. However, if there is a heater in the system, and it is operating, the “Heater Cooldown” feature is enabled. When you press the “FILTER” button to turn off the filter, only the heater will turn off, the “FILTER” LED will flash and the display will indicate “Heater Cooldown”. At this point the filter pump will automatically turn off after 5 minutes of heater cooldown operation. If you want to override the heater cooldown operation, simply press the “FILTER” button again to turn off the filter pump.

If you call the Goldline Technical Service Dept. for assistance, they may ask for the software revisions of both the main unit and each of the display/keypads or other devices that are attached to the system. Note that it is possible that different display/keypads have different software revision levels. For this reason, it is advisable to check this diagnostic menu item on every display.

Digital Spa Software
Remote B r1.00
No function
Move to previous/next menu item

BB Spa Software
Remote A r1.00
No function
Move to previous/next menu item

RF Base Software
r1.20  ID:1234
No function
Move to previous/next menu item

Exp. Unit Software
Revision 1.10
No function
Move to previous/next menu item

Display Software
remote-OB r3.10
No function
Move to previous/next menu item

for PS-16 only

Main Software
Revision 2.40
No function
Move to previous/next menu item

Cell Temp Sensor
77ºF
No function
Move to previous/next menu item

Solar Sensor
Short circuit
No function
Move to previous/next menu item

Air Sensor
No function
Move to previous/next menu item

Water Sensor
Open circuit
Move to previous/next menu item

Flow Switch
No function
Move to previous/next menu item

Valve4 or Heater2
(See Configuration Menu)

Press to load the “Instant Salt” into the averaged salt display

Press to load the “Instant Minerals” into the averaged minerals display

Press to load the “Instant Salt” into the averaged salt display

Press to load the “Instant Minerals” into the averaged minerals display
• Chlorinator Cell sensor -- if the chlorinator function enabled (Configuration Menu/Chlorinator) and the cell sensor is either an open or short circuit.

• PS-16 Communication Error -- if an AQL-PS-16 and the Expansion Unit is not responding.

• Low Volts -- if the chlorinator cell voltage is too low.

• No Cell Power -- if no chlorinator cell power is detected on the printed circuit board.

• Chk Flow Switch -- if the flow switch input is invalid.

• Cell Power Error -- if a chlorinator cell power error is detected on the printed circuit board.

• No Flow-Filter Pump -- if the filter pump is on and the flow switch indicates no flow for 15 minutes or more.

• Cell Missing -- if the chlorinator is enabled but no cell is detected.

For helpful troubleshooting information on any of these issues, go to the Diagnostic Menu and then scroll through the various items until you see the cause for the “CHECK SYSTEM” LED being illuminated.

**Diagnostic Menu**

To enter the Diagnostic Menu, press the “Menu” button repeatedly until the display shows “Diagnostic Menu”. At this point, you can use either the “<” or “>” buttons to scroll through the various menu items which are described below:

-23.45V  84°F  3200PPM

Press to switch chlorinator operation to opposite polarity (15 second delay)

Move to previous/next menu item

+/- 23.45V is the voltage applied to the chlorinator cell
+/-6.75A is the current (amps) through the cell
84°F is the water temperature at the cell
3200PPM is the “instant” salt level at this time

For the chlorinator to be operating, several other things must be happening: the filter pump must be running, the flow switch must be detecting flow, the chlorinator setting must be set greater than 0%, the water temperature at the cell must be between 50°F and 140°F, and the salt level must be within the operating range. If any of these conditions are not met, the chlorinator diagnostic display will tell you the reason. It’s possible to have more than one reason, in which case after you rectify what was displayed the first time, a second display will appear.

If the current (amps) display is 0.00A, then the chlorinator is operating normally but is in the off part of its normal operating cycle. Simply press either the “<” or “>” key to start a new cycle.

The Aqua Logic periodically reverses the polarity of the voltage applied to the cell in order to automatically clean off any calcium deposits. It is important that you check the chlorinator operation in both polarities. To do this, press either the “<” or “>” buttons and the chlorinator will turn off, wait for 15 seconds and then turn on in the opposite polarity.

If a conventional or solar heater is operating, it is likely that the temperature of the water at the cell is higher than the pool/spa water temperature displayed on the Aqua Logic default display.

Two Speed Filter Pump: If the pump is currently off, simply press the “FILTER” button to turn on high speed operation of the filter pump. The “FILTER” LED will illuminate continuously. If the pump is currently on, simply press the “AUX1” button again to turn off the filter pump, only the heater will turn off, the Filter LED will flash and the display will indicate “Heater Cooldown”. At this point the filter pump will automatically turn off after 5 minutes of heater cooldown operation. If you want to override the heater cooldown, simply press the “AUX1” button again to turn off the filter pump.

Two Speed Filter Pump: If the pump is currently off, simply press the “AUX1” button to turn on high speed operation of the filter pump. The “AUX1” LED will illuminate continuously. Pressing the “AUX1” button again will switch to low speed operation and the “AUX1” LED will flash. If you attempt to switch to low speed shortly after turning on high speed the filter pump will automatically remain in high speed for 3 minutes before switching to low speed to allow the pump to prime and establish normal water flow.

**Freeze Protection:** This function protects the pool, plumbing, and equipment against freeze damage. If Freeze Protection is enabled and the AIR temperature sensor falls below the preset freeze protection temperature (see Filter Pump Configuration), the Aqua Logic will turn on the filter pump to circulate the water.

**Spa Filter Pump (when using Dual Equipment)**

Single Speed Filter Pump: If the pump is currently off, press the “AUX1” button to turn on the pump. Pressing the “AUX1” button again will turn off the pump. However, if there is a heater in the system, and it is operating, and the “Heater Cooldown” feature is enabled (Configuration Menu) then: when you press the “AUX1” button to turn off the filter, only the heater will turn off, the Filter LED will flash and the display will indicate “Heater Cooldown”. At this point the filter pump will automatically turn off after 5 minutes of heater cooldown operation. If you want to override the heater cooldown, simply press the “AUX1” button again to turn off the filter pump.

Two Speed Filter Pump: If the pump is currently off, simply press the “AUX1” button to turn on high speed operation of the filter pump. The “AUX1” LED will illuminate continuously. Pressing the “AUX1” button again will switch to low speed operation and the “AUX1” LED will flash. If you attempt to switch to low speed shortly after turning on high speed the filter pump will automatically remain in high speed for 3 minutes before switching to low speed to allow the pump to prime and establish normal water flow.

**Freeze Protection:** This function protects the pool, plumbing, and equipment against freeze damage. If Freeze Protection is enabled and the AIR temperature sensor falls below the preset freeze protection temperature, the Aqua Logic will turn on the spa filter pump to circulate the water.

**Lights and Aux Outputs**

**Standard Relay:** Manual operation of all relays (LIGHTS, AUX1 and AUX2 for a PS-4 model, LIGHTS, AUX1 - AUX6 for a PS-8 model, or LIGHTS, AUX1 - AUX14 for a PS-16 model) is identical. Assuming that the relay is currently off, simply press the appropriate button to turn on the relay. If the relay does not turn on, it is probably due to the “interlock” feature (which was set up in the Configuration Menu) being activated that requires the filter pump to be running and the valves to be in the pool-only position. This protects pumps and other equipment from possible damage. If the controlled output is on, pressing the appropriate button again will turn off the relay. Manual turn off is disabled if the “Freeze Protection” feature is enabled and the air temperature is less than the selected freeze temperature threshold.

**Dimmer Relay:** If Lights or an Aux output is configured as a dimmer, pressing the corresponding button will generate a temporary display which shows the dimmer output level (0% - On 100%). Pushing the “+” or “-” button changes the level in increments of 20%. When the desired output level is displayed, press the corresponding button again to turn off the display and return to normal operation. When the Lights or Aux output comes on again (either manually or automatically), the dimmer output level will be the same as the last time that it was set.

**Pool/Spa Valves**

**Pool-only or Spa-only systems:** The POOL/SPA/SPILLOVER button has no function.

**Standard Pool and Spa systems without spa spillover:** In pool-only mode (“POOL” LED illuminated), press the “POOL/SPA/SPILLOVER” button to switch to spa-only operation (“SPA” LED illuminated). Pressing the “POOL/SPA/SPILLOVER” button again will switch back to pool-only. Note that the filter pump will turn off while the pool/spa valves are turning.
Standard Pool and Spa systems with spa spillover: When currently in the pool-only mode ("POOL" LED illuminated), press the “POOL/SPA/SPILLOVER” button to switch to spa-only operation ("SPA" LED illuminated). Press the button again to switch to spa/spillover operation ("SPILLOVER" LED illuminated). Pressing the “POOL/SPA/SPILLOVER” button again will switch back to pool-only mode. Note that the filter pump will turn off while the pool/spa valves are turning.

Dual Equipment Pool and Spa systems without spa spillover: The POOL/SPA/SPILLOVER button has no function. The “POOL” LED will always be illuminated.

Dual Equipment Pool and Spa systems with spa spillover: When currently in the separate Pool and Spa loops mode ("POOL" LED illuminated) and the Spa Filter is off, press the POOL/SPA/SPILLOVER button to switch to spa spillover operation ("SPILLOVER" LED illuminated). Press the POOL/SPA/SPILLOVER button again to return to the separate Pool and Spa loops mode of operation. Note that the Pool Filter pump will shut off while the pool/spa return valve is turning. The system will automatically switch out of spillover whenever the spa filter pump is turned on.

Note: For Dual Equipment Pool and Spa systems, there is no Spa Only mode.

Heaters
This description applies to Heater1 and to Heater2, if programmed (note that the function of the Valve4 button changes to Heater2 when Heater2 is enabled). Pressing the “HEATER” button causes the Aqua Logic to switch the heater control output between a “forced off” state and a normal, automatic thermo-static control operating state.

System Off
Each remote display/keypad has a red “SYSTEM OFF” button on the upper left corner of the keypad. Pressing this button will turn all outputs off and they will remain off, regardless of any programmed control logic, until either the “SYSTEM OFF” button (on any remote display/keypad) is pressed again or the “SERVICE” button is pressed on the display/keypad at the main unit. The red “SYSTEM OFF” LED will illuminate to indicate that all outputs and being forced off.

WARNING: pressing the “SYSTEM OFF” button overrides any programmed freeze protection and may cause damage to your system in freezing conditions.

Service
The main unit keypad has a “SERVICE” button that is used primarily during servicing of the pool equipment. If you want to completely disable the automatic operation and operate the system manually, you can put the system into Service or Service-Timed mode by pressing the “Service” button. Pressing the “SERVICE” button once will switch the system into service mode which means that all automatic functions are disabled, and the optional remote display/keypads are disabled (except for manual turn off for emergencies). The outputs can be manually controlled by pressing the buttons on the local display/keypad. The red “SERVICE” LED will be illuminated and the Aqua Logic will remain in this mode of operation until manually taken out of service mode.

Pressing the “SERVICE” button again will cause the Aqua Logic to switch to service-timed mode which is very similar to service mode, except that the Aqua Logic will automatically return to normal operation after 3 hours. During service timed operation, the “SERVICE” LED will flash and the time remaining will be displayed on the remote display/keypad(s).

Pressing the “SERVICE” button again, will return the Aqua Logic to normal (automatic) operation.

Check System Indicator
The “CHECK SYSTEM” LED will alert you when the Aqua Logic detects any of the following conditions that are abnormal and require attention for optimal operation of your pool.

- Inspect Cell - for optimum operation, you will need to inspect the Aqua Logic chlorinator cell approximately every 3 months and clean the cell if necessary. The Aqua Logic will automatically remind you when it is time and display “Inspect Cell, + to reset” as part of the rotating Default Menu. Clean the cell (see instructions, pg 25) and then press the “+” button during the “Inspect Cell” display to reset the timer.

- Low Salt/Minerals or Very Low Salt/Minerals -- when the salt is too low the Aqua Logic will generate less chlorine and the life of the cell is degraded. Check the cell and clean if necessary (see instructions, pg 35) before adding salt (see instructions, pg 32).

- High Salt/Amps/Minerals -- the Aqua Logic will stop generating chlorine under certain high salt conditions in order to protect the internal electronics from damage. The only way to lower the salt level is to partially drain the pool and add fresh water.

- Water/Pool Sensor -- if the water or pool (if Dual Equipment) sensor is either an open or short circuit.

- Air sensor -- if the freeze protection feature is enabled (Configuration Menu/ Filter Config.) and the air sensor is either an open or short circuit.

- Solar/Heli/OALS sensor -- if the solar (if solar is enabled), (Configuration Menu/Solar Config.) or spa (if Dual Equipment) sensor is either an open or short circuit.

Troubleshooting and Diagnostic Information
The Aqua Logic provides different tools to aid in troubleshooting any problems that may occur in your pool and/or spa system. The Service mode will allow you to disable automatic operation and manually control most of the equipment (the heater and general purpose Valve3 output are the exceptions). The Diagnostic Menu will provide some detailed information regarding system operation.

While both of the features are primarily intended for the use of the professional service technician, their function is fully explained below. If you believe your system is not operating properly or have questions regarding the operation, call the Goldline Technical Service Dept. from Monday through Friday, 8AM to 8PM EST at 888-9221-7665.

Service Mode
The main unit keypad has a SERVICE button that is used primarily during servicing of the pool equipment.

If you want to completely disable the automatic operation and operate the system manually, you can put the system into Service or Service-Timed mode by pressing the “Service” button. Pressing the “SERVICE” button once will switch the system into service mode which means that all automatic functions are disabled, the optional remote display/keypads are disabled (except for manual turn off for emergencies). The outputs can be manually controlled by pressing the buttons on the local display/keypad. The red “SERVICE” LED will be illuminated and the Aqua Logic will remain in this mode of operation until manually taken out of service mode.

Pressing the “SERVICE” button again will cause the Aqua Logic to switch to service-timed mode which is very similar to service mode, except that the Aqua Logic will automatically return to normal operation after 3 hours. During service timed operation, the “SERVICE” LED will flash and the time remaining will be displayed on the remote display/keypad(s).

Pressing the “SERVICE” button again, will return the Aqua Logic to normal (automatic) operation.
System Maintenance

To maintain maximum performance, it is recommended that you open and visually inspect the cell every 3 months or after cleaning your filter. The Aqua Logic will remind you to do this by displaying the message “Inspect/Clean Cell” after approximately 500 hours of operation.

The Aqua Logic electrolytic cell has a self-cleaning feature incorporated into the electronic control’s logic. In most cases this self-cleaning action will keep the cell working at optimum efficiency. In areas where water is hard (high mineral content) or in pools where the water chemistry has been allowed to “out of balance”, the cell may require periodic cleaning.

Servicing and Cleaning the Aqua Logic Cell

Turn off power to the Aqua Logic before removing the electrolytic cell. Once removed, look inside the cell and inspect for scale formation (light colored crusty or flaky deposits) on the plates and for any debris which has passed through the filter and caught on the plates. If no deposits are visible, reinstall. If deposits are seen, use a high pressure garden hose and try to flush the scale off. If this is not successful, use a plastic or wood tool (do not use metal as this will scratch the coating off the plates) and scrape deposits off of plates. Note that a buildup on the cell indicates that there is an unusually high calcium level in the pool (old pool water is usually the cause). If this is not corrected, you may need to periodically clean the cell. The simplest way to avoid this is to bring the pool chemistry to the recommended levels as specified.

Mild Acid Washing: Use only in severe cases where flushing and scraping will not remove the majority of deposits. To acid wash, turn off power to Aqua Logic. Remove cell from piping. In a clean plastic container, mix a 2:1 solution of water to muriatic acid (one gallon of water to two quarts of muriatic acid). ALWAYS ADD ACID TO WATER - NEVER ADD WATER TO ACID. Be sure to wear rubber gloves and appropriate eye protection. The level of the solution in the container should just reach the top of the cell so that the wire harness compartment is NOT submerged. It may be helpful to coil the wiring before immersing the cell. The cell should soak for a few minutes and then rinse with a high pressure garden hose. If any deposits are still visible, repeat soaking and rinsing. Replace cell and inspect again periodically.

Winterizing

The Aqua Logic electrolytic cell and flow detection switch will be damaged by freezing water just as your pool plumbing would. In areas of the country which experience severe or extended periods of freezing temperatures, be sure to drain all water from the pump, filter, and supply and return lines before any freezing conditions occur. The electronic control is capable of withstanding any winter weather and should not be removed.

If you are in an area that only experiences occasional freezing conditions, your Aqua Logic system may be set up to circulate the pool water whenever the air temperature drops to 38°F. Make sure the air sensor is recording the correct temperature and is NOT located in the direct sunlight to ensure proper freeze protection operation.

Spring Start-up

When first starting the pool in the spring time, it is highly recommended that you temporarily set the pool and spa chlorinator settings (Settings Menu/Pool Sanitizer & Spa Sanitizer) to 0% (off) and then manually shock the pool with any chlorine based shock product and balance the pool water chemistry per the levels indicated in the Chlorinator Operation section (page 31). Make sure to check the salt and stabilizer levels and bring them up to the recommended levels. Your local Authorized Aqua Dealer or pool store can recommend the best chemical treatment for your pool. After the water is clear and balanced, then go back and adjust the pool and spa chlorinator settings to the appropriate levels. Test the pool chlorine level weekly and adjust the chlorinator settings up or down accordingly.

It is usually a good idea to also inspect the cell and clean if necessary at the start of the season. See instructions above.

Automatic System Operation

The Aqua Logic controls most of your pool equipment automatically in order to minimize the time spent working on your pool. Most of the pool equipment can be programmed to operate on a timeclock basis. In addition, the desired pool and spa temperatures and pool and spa chlorinator settings can be programmed. This section will guide you on how to program the automatic operation for each function.

The programming of automatic functions can be performed at either the main display/keypad located at the pool equipment pad or the in-home remote display/keypad.

Using the programming buttons

There are 5 buttons on each keypad that are used for programming (refer to diagram).

There are 4 steps to programming any function:

1. Press the “MENU” button to get to the desired menu. Multiple pushes of the button will rotate through all 5 menus and return to the starting point.

2. Press either key to scroll through the various items in the selected menu. Multiple pushes of the button will rotate through all menu items and return to the starting point. Only menu items that are applicable to your pool will appear. (Example: if you don’t have a spa, then no spa related menu items will appear.)

3. Once a menu item has been selected above, the current setting/value will appear (flashing) on the display. Use the “+” and “-” keys to change this selection. Sometimes “+” and “-” will adjust a value up or down (example: heater temperature setting or timeclock on/off time). In this case, pushing the “+” or “-” button in for more than one second will make the values auto scroll. In other cases, the “+” and “-” may toggle between 2 options (example: turning superchlorination ON or OFF).

4. After you have adjusted the item to the desired value, simply move on to the next menu item to “lock in” your new setting. The Aqua Logic memory will maintain the setting, even if power is removed for an extended period.
POUNDS and (Kg) OF STABILIZER (CYANURIC ACID) NEEDED FOR 80 PPM

<table>
<thead>
<tr>
<th>Gallons and (Liters) of Pool/Spa water</th>
<th>5 ppm</th>
<th>10 ppm</th>
<th>15 ppm</th>
<th>20 ppm</th>
<th>25 ppm</th>
<th>30 ppm</th>
<th>35 ppm</th>
<th>40 ppm</th>
<th>45 ppm</th>
<th>50 ppm</th>
<th>55 ppm</th>
<th>60 ppm</th>
<th>65 ppm</th>
<th>70 ppm</th>
<th>75 ppm</th>
<th>80 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>(30000) (37800) (40000) (40500) (45000) (47500) (50000) (52500) (55000) (57500) (60000) (62500) (65000) (67500) (70000) (72500) (75000) (77500) (80000)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>(82500) (90000) (92500) (95000) (97500) (100000) (102500) (105000) (107500) (110000) (112500) (115000) (117500) (120000) (122500) (125000) (127500) (130000)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>(132500) (135000) (137500) (140000) (142500) (145000) (147500) (150000) (152500) (155000) (157500) (160000) (162500) (165000) (167500) (170000) (172500) (175000)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>(177500) (180000) (182500) (185000) (187500) (190000) (192500) (195000) (197500) (200000) (202500) (205000) (207500) (210000) (212500) (215000) (217500)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>(220000) (222500) (225000) (227500) (230000) (232500) (235000) (237500) (240000) (242500) (245000) (247500) (250000) (252500) (255000) (257500) (260000)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>(262500) (265000) (267500) (270000) (272500) (275000) (277500) (280000) (282500) (285000) (287500) (290000) (292500) (295000) (297500) (300000) (302500)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

- Denotes conditional items
The Aqua Logic’s five main menus have many items in each that allow you to customize the operation of your pool/spa equipment. The chart on the previous page shows the Aqua Logic’s five menus as well as each menu’s specific settings.

The Default Menu is a series of informative displays (temperatures, salt levels, chlorinator settings, etc.) with nothing to set. The Aqua Logic will automatically switch to the default menu when no keys have been pressed for 2 minutes and will then scroll through each display.

The Settings Menu and the Timers Menu are the menus you will be using most often to adjust the operation of your pool. The Configuration Menu is used when the system is installed and defines what equipment is connected to each output and the operational logic that will control the equipment. This menu is normally “locked” and should only be used by a pool professional. Details regarding the Configuration menu can be found on page 16.

The “Diagnostic Menu” is primarily intended for the service technician and contains information and details about the system operation that are helpful in troubleshooting, if problems occur.

### Settings Menu

The Settings Menu allows you to set all system operating parameters except the clock and countdown timers which are part of the Timers Menu.

---

<table>
<thead>
<tr>
<th>Pool Water Level</th>
<th>8,000</th>
<th>10,000</th>
<th>12,000</th>
<th>14,000</th>
<th>16,000</th>
<th>18,000</th>
<th>20,000</th>
<th>22,000</th>
<th>24,000</th>
<th>26,000</th>
<th>28,000</th>
<th>30,000</th>
<th>32,000</th>
<th>34,000</th>
<th>36,000</th>
<th>38,000</th>
<th>40,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pounds and Kg of Salt Needed for 3,200 PPM</td>
<td>0</td>
<td>97</td>
<td>121</td>
<td>145</td>
<td>170</td>
<td>194</td>
<td>218</td>
<td>242</td>
<td>266</td>
<td>290</td>
<td>315</td>
<td>340</td>
<td>364</td>
<td>389</td>
<td>413</td>
<td>437</td>
<td>462</td>
</tr>
<tr>
<td>Liters of Pool/Spa water</td>
<td>1,000</td>
<td>1,17</td>
<td>1,33</td>
<td>1,49</td>
<td>1,65</td>
<td>1,81</td>
<td>1,97</td>
<td>2,13</td>
<td>2,29</td>
<td>2,45</td>
<td>2,61</td>
<td>2,77</td>
<td>2,93</td>
<td>3,09</td>
<td>3,25</td>
<td>3,41</td>
<td>3,57</td>
</tr>
</tbody>
</table>

---

The spa heater setting will only appear if the system has been setup for “spa only” or “pool and spa” operation and the “Heater1” and/or “Heater2” control is enabled. The heater will turn on whenever the pool/spa valves are in the “spa only” position and the filter pump is running and the spa water temperature is less than the desired temperature setting. If you have both solar heat and a conventional heater and the solar priority option is selected (Configuration Menu), then the conventional heater will only operate when solar heat is NOT available.

For Pool and Spa dual equipment with separate heaters (“Pool and Spa -Dual” and “Htr1=Spa, Htr2=Pool” selected), Spa Heater 1 is tied to the Spa Filter (AUX1).
The pool’s chemistry must be balanced BEFORE activating the Aqua Logic’s optional chlorinator function. NOTE: If the pool does not have new water, add metal remover and non-copper based algacide to the pool, per manufacturer’s instructions. This ensures a quick, troublefree transfer to the Aqua Logic system.

**Salt (When using optional chlorinator function - requires AQL-CL chlorination kit)**

**Salt Level**

Use the chart on the following page to determine how much salt in pounds or (Kgs) should be added to reach the recommended levels. Use the equations below (measurements are in feet/gallons and meters/liters) if pool size is unknown.

<table>
<thead>
<tr>
<th>CHEMICAL</th>
<th>IDEAL LEVELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt</td>
<td>2700 to 3400 ppm</td>
</tr>
<tr>
<td>Free Chlorine</td>
<td>1.0 to 3.0 ppm</td>
</tr>
<tr>
<td>pH</td>
<td>7.2 to 7.6</td>
</tr>
<tr>
<td>Cyanuric Acid (Stabilizer)</td>
<td>60 to 80 ppm (80 ppm best)</td>
</tr>
<tr>
<td>Total Alkalinity</td>
<td>80 to 120 ppm</td>
</tr>
<tr>
<td>Calcium Hardness</td>
<td>200 to 400 ppm</td>
</tr>
<tr>
<td>Metals</td>
<td>0 ppm</td>
</tr>
<tr>
<td>Saturation Index</td>
<td>-0.2 to +0.2 (0.0 best)</td>
</tr>
</tbody>
</table>

The operating salt level is between 2700-3400 PPM (parts per million) with 3200 PPM being optimal. Before adding any salt, test the salt level. This is especially important for retrofit installation to older pools where chlorine added to the pool over time has ended up as salt. If the level is low, determine the number of gallons in the pool and add salt according to the chart below. A low salt level will reduce the efficiency of the sanitization and result in low chlorine production. A high salt level can cause the Aqua Logic to stop chlorinating. The salt in your pool/spa is constantly recycled and the loss of salt throughout the swimming season should be minimal. This loss is due primarily to the addition of water because of splashing, backwashing, or draining (because of rain). Salt is not lost due to evaporation.

**Type of Salt to Use**

It is important to use only sodium chloride (NaCl) salt that is greater than 99.0% pure. This can be found at most pool stores in 40-80 lb. bags labeled “for use in swimming pools”. Alternatively, use common food quality or water softener salt that is at least 99.0% pure. It is also acceptable to use water conditioning salt pellets, however, it will take longer for them to dissolve. Do not use rock salt, or salt with more than 1% of yellow prussiate of soda, salt with anti-caking additives, or iodized salt.

**How to Add Salt**

For new plaster pools, wait 10-14 days before adding salt to allow the plaster to cure. Turn the circulating pump on and add salt directly into the pool. Brush the salt around to speed up the dissolving process—do not allow salt to pile up on the bottom of the pool. Run the filter pump for 24 hours with the suction coming from the main drain (use pool vacuum if there is no main drain) to allow the salt to evenly disperse throughout the pool. The salt display may take 24 hours to respond to the change in salt concentration.

Always check stabilizer (cyanuric acid), when checking salt. These levels will most likely decline together. Use the chart on page 34 to determine how much stabilizer must be added to raise the level to 80 ppm.
**Chlorinator Operation / Water Chemistry**

**General Water Chemistry**
Salt is required only if you are using the chlorinator features on the Aqua Logic Control. If you are NOT using the chlorinator, it is recommended that you follow all of the other chemistry recommendations besides salt. Refer to the description of the Aqua Logic configuration menu for information on enabling/disabling the chlorinator (see page 16).

**Water Chemistry**
The table below summarizes the levels that are recommended by the Association of Pool and Spa Professionals (APSP). The only special requirements for the Aqua Logic are the salt level and stabilizer.

<table>
<thead>
<tr>
<th>Gallons</th>
<th>Liters (pool size in meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangular</td>
<td>Length x Width x Average Depth x 7.5</td>
</tr>
<tr>
<td></td>
<td>Length x Width x Average Depth x 1000</td>
</tr>
<tr>
<td>Round</td>
<td>Diameter x Diameter x Average Depth x 5.9</td>
</tr>
<tr>
<td></td>
<td>Diameter x Diameter x Average Depth x 785</td>
</tr>
<tr>
<td>Oval</td>
<td>Length x Width x Average Depth x 6.7</td>
</tr>
<tr>
<td></td>
<td>Length x Width x Average Depth x 893</td>
</tr>
</tbody>
</table>

**Saturation index**
The saturation index (Si) relates to the calcium and alkalinity in the water and is an indicator of the pool water “balance”. Your water is properly balanced if the Si is 0 ±0.2. If the Si is below -0.2, the water is corrosive and plaster pool walls will be dissolved into the water. If the Si is above +0.2, scaling and staining may occur. Use the chart below to determine the saturation index.

\[
Si = pH + Ti + Ci + Ai - 12.1
\]

<table>
<thead>
<tr>
<th>°C</th>
<th>Ti</th>
<th>Total Hardness</th>
<th>Cl</th>
<th>Total Alkalinity</th>
<th>Ai</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>65</td>
<td>75</td>
<td>1.5</td>
<td>75</td>
<td>1.5</td>
</tr>
<tr>
<td>16</td>
<td>60</td>
<td>100</td>
<td>1.6</td>
<td>100</td>
<td>2.0</td>
</tr>
<tr>
<td>19</td>
<td>60</td>
<td>100</td>
<td>1.6</td>
<td>100</td>
<td>2.0</td>
</tr>
<tr>
<td>24</td>
<td>75</td>
<td>150</td>
<td>2.2</td>
<td>150</td>
<td>2.2</td>
</tr>
<tr>
<td>28</td>
<td>85</td>
<td>200</td>
<td>2.3</td>
<td>200</td>
<td>2.3</td>
</tr>
<tr>
<td>34</td>
<td>95</td>
<td>250</td>
<td>2.4</td>
<td>250</td>
<td>2.4</td>
</tr>
<tr>
<td>38</td>
<td>105</td>
<td>300</td>
<td>2.5</td>
<td>300</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Pool Chlorinator 60%**

This setting will appear only if the chlorinator function is enabled and has been setup for “pool only” or “pool and spa”. It will determine the chlorinator output when the system is operating in pool-only or spa spillover modes. The actual amount of chlorine introduced into the pool is determined by: this setting, the amount of time the filter pump is running, the water temperature, and the amount of salt in the water. If the filter pump is running due to the freeze protection feature, then the chlorinator will not operate during this time.

**Display Light On for 60 sec**

This function controls the blue backlight on the display. If the “On for 60 seconds” option is selected, then the backlight will automatically turn off 60 seconds after the last key is pressed and will stay off until next time a key is pressed.

Note that the Display Light selection only applies to the display keypad that you are currently using. Other display/keypads will not be affected. You need to individually set this option for each display/keypad in the system.

**Beeper**

When “Enabled”, the keypad will beep every time a key is pressed. If this audible indication is not desired, select “Disabled”.

This function only applies to the display/keypad that you are currently using. You need to set this option for each display/keypad in your system.

**Move to previous/next menu item**

This function is not supported on all display/keypads. If the “Enabled” selection is not supported, then the current software revision of that particular keypad/display does not support the option and it will default to Beeper Enabled.
This menu will only appear if a wireless base station is connected to the Aqua Logic. Perform this procedure each time a wireless remote control is added to the Aqua Logic system. During this procedure the wireless remote “learns” and remembers the ID code for the wireless base station connected to this particular Aqua Logic unit and will reject messages with any other ID codes. If "Base NOT Found" is displayed, then the Aqua Logic can not communicate with the transmitter/receiver base station attached to the main unit. If "NOT Successful" is displayed, then the base station did not receive a signal from the remote control. This may be due to the distance between the Base Receiver and the remote device being too great or may be due to interference caused by other RF equipment operating in the neighborhood. Try using the “Change Channel” command and then repeat the “Teach Wireless” command.

Timers Menu

The Timers Menu allows you to set all timeclock and countdown timers which control the automatic operation of your pool/spa system.

Each timeclock has a single on/off program per day. All of the timeclocks are setup (Configuration Menu) either as "all days" or "weekends/weekdays". If "weekends/weekdays" are selected, you will need to program on times for both weekdays and weekends, even if you want them to be the same. All times are adjusted in 15 minute increments (9:00A, 9:15A, 9:30A, etc.). If you program the on time equal to the off time ("10:00A to 10:00A") the output will NEVER turn on. If you want to disable a timeclock, you can set the on time equal to the off time and you will notice the times disappear and the display simply shows "Off". If, at a later time, you wish to re-activate the timeclock, simply press either the "+" or "-" buttons to go back to a normal timeclock programming display.

The Countdown timer is programmed in increments of 5 minutes from “Manual On/Off” (0 minutes) to a maximum of “21:00” (21 hours). When “Manual On/Off” is displayed, the countdown timer is disabled and the output will be manually controlled. When a countdown timer is equal or greater than "9:05", pressing the appropriate output button will turn the output on and start the timer. Pressing the button again will turn the output off or, when the programmed time has elapsed, the output will automatically turn off.

Enter/Exit Service (or Service—Timed) Mode

1. Go to Aqua Logic main unit (normally mounted near the pool equipment)

2. Pressing the “Service” button rotates through normal operation (red LED off), service mode (red LED on continuously) and service-timed mode (red LED flashing).

Note: This operation can only be performed at the main Aqua Logic unit. Both “Service” and “Service-Timed” disable all automatic programmed operations and allow manual operation from the main unit only. The buttons on the remote display/keypads will still be able to turn equipment off in case of an emergency, but will not turn any equipment on. If the system is in “Serviced-Timed” it will automatically switch back to normal operation at the end of the time period.
Note: Separate chlorinator output levels for the pool and spa must be set. If the valves are in the pool-only or spa spillover positions, then the chlorinator will operate per the pool setting. If the valves are in the spa-only position then the chlorinator will operate according to the spa setting. The actual amount of chlorine introduced into the pool/spa is determined by: this output setting, the amount of time the filter pump is running, the water temperature, and the amount of salt in the water. Also see Start/Stop Superchlorination below.

### Start/Stop Superchlorination
1. Press the “MENU” button repeatedly until “Settings Menu” is displayed.
2. Press the “>” button repeatedly until “Super Chlorinate” is displayed.
3. The display will show whether superchlorination is “on” or “off”.
4. Press “+” or “-” to toggle between “on” and “off”.

Note: Once started, superchlorination will run for the programmed number of hours (Timers Menu/Super Chlorinate Hours) or until you manually turn it off. Superchlorination may be temporarily interrupted for a programmed spa operation.

### Program a Timeclock
1. Press the “MENU” button repeatedly until “Settings Menu” is displayed.
2. Press the “>” button repeatedly until the “xxx—days” or “xxx—weekends” is displayed.
3. Use the “+” and “-” buttons to set the desired time period.
4. Press “>” to go to the “weekday” settings.

Note: During the programmed time, there may be other automatic or manual operations that prevent the relay/valve from operating—see a more detailed discussion under Automatic System Operation/Timers Menu/Aux Timeclock or in Troubleshooting/Diagnostic Information.

### Program a Countdown Timer
1. Press the “MENU” button repeatedly until “Settings Menu” is displayed.
2. Press the “>” button repeatedly until the “xxx—Timer” is displayed.
3. Use the “+” and “-” buttons to set the desired timer period.

Note: A setting of 0:00 will display as “Manual On/Off.” The countdown automatic turn off function is disabled by manual operation is still permitted. There may be other automatic or manual operations that prevent the relay/valve from operating—see a more detailed discussion under Automatic System Operation/Timers Menu/Aux Timeclock or in Troubleshooting/Diagnostic Information.

---

Important: All of the displays shown below use the default generic names for each function in output. The Aqua Logic allows more descriptive names to be assigned to each piece of equipment (refer to the section regarding the Configuration Menu for more information).

### Filter T1
- **Filter T1-all**
  - **Adjust time setting**
  - **Move between start and stop times & to previous/next menu item**

### Filter T1-weekend
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Filter T1-weekday
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Filter T2
- **Filter T2-all**
  - **Adjust time setting**
  - **Move between start and stop times & to previous/next menu item**

### Filter T2-weekend
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Filter T2-weekday
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Spa
- **Spa-all**
  - **Adjust time setting**
  - **Move between start and stop times & to previous/next menu item**

### Spa-weekend
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Spa-weekday
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

This menu is only available if the system has been setup for “spa only” or “pool and spa”. During the programmed spa time, the Aqua Logic will move the pool/spa valves into the “spa-only” position and turn on the filter pump. The heater will automatically heat the spa up to the programmed spa temperature. This programmed spa operation will take precedence.

---

Important: All of the displays shown below use the default generic names for each function in output. The Aqua Logic allows more descriptive names to be assigned to each piece of equipment (refer to the section regarding the Configuration Menu for more information).

### Filter T1
- **Filter T1-all**
  - **Adjust time setting**
  - **Move between start and stop times & to previous/next menu item**

### Filter T1-weekend
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Filter T1-weekday
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Filter T2
- **Filter T2-all**
  - **Adjust time setting**
  - **Move between start and stop times & to previous/next menu item**

### Filter T2-weekend
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Filter T2-weekday
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Spa
- **Spa-all**
  - **Adjust time setting**
  - **Move between start and stop times & to previous/next menu item**

### Spa-weekend
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

### Spa-weekday
- **Adjust time setting**
- **Move between start and stop times & to previous/next menu item**

This menu is only available if the system has been setup for “spa only” or “pool and spa”. During the programmed spa time, the Aqua Logic will move the pool/spa valves into the “spa-only” position and turn on the filter pump. The heater will automatically heat the spa up to the programmed spa temperature. This programmed spa operation will take precedence.
Quick “How To” Guide

Operate the Spa—Manually
1. Press the “Pool/Spa” button to go to “spa-only” operation (“SPA” LED illuminated). In some cases, this may take more than one press of the button.
2. If the filter pump is not already on, press the “FILTER” button to turn it on.
3. If the spa is below the desired temperature, the heater will turn on automatically when the filter pump is on and the valves are in the spa-only position. If you have not already set the desired temperature for the spa, see “Set Heater Temperature” below.
4. If the spa has a separate jet pump and or blower, determine if the jet pump/blower is controlled by Aux1 or Aux2 (it should be marked on the label inside the door). Then press the appropriate button to turn on the jets/blower.

Operate the Spa—Automatically
1. Press the “MENU” button repeatedly until “Timers Menu” is displayed.
2. Press the “+” button repeatedly until the “Spa—all days” or “Spa—weekends” is displayed.
3. Use the “+” and “-” buttons to set the desired start time, then press “>” to switch to the off time. If you are setting the “weekend” timeclock, press “<” to go to the “weekday” settings.

Note: During the programmed spa time, the valves will automatically switch to the “spa-only” position, the filter pump will turn on, and, if the spa is not up to the desired temperature, the heater will start. This operation is the highest priority and will take precedence over other automatically programmed operations. At the end of the spa period, the Aqua Logic will return to its normally programmed operation state.

Set the Heater Temperature (or turn heater permanently off)
1. Press the “MENU” button repeatedly until “Settings Menu” is displayed.
2. Press the “+” button repeatedly until the “Spa Heater” or “Pool Heater” is displayed.
3. If the filter pump is not already on, press the “FILTER” button to turn it on.
4. If the spa has a separate jet pump and or blower, determine if the jet pump/blower is controlled by Aux1 or Aux2 (it should be marked on the label inside the door). Then press the appropriate button to turn on the jets/blower.

Set the Chlorinator Output
1. Press the “MENU” button repeatedly until “Settings Menu” is displayed.
2. Press the “+” button repeatedly until the “Spa Chlorinator” or “Pool Chlorinator” is displayed.
3. Press the “+” or “-” buttons repeatedly to adjust the setting. If you adjust the setting to 0%, the chlorinator will be off all the time.

Note: Common errors are incorrect pump speeds, incorrect filter run time, or incorrect heater set points. If unsure what setting is correct, consult the pump manufacturer’s manual or a professional for advice.
For one speed spa pumps, this is the second filter timeclock.

For two speed pumps, this timeclock will set the normal time period for spa filter pump low speed operation (the word “Spa Filter T2” in the display will be replaced with “Spa Filter Lo”). If the spa filter pump was off prior to the start of this time period, the filter pump will first turn on at high speed for 3 minutes to prime and establish water flow. Afterwards, it will drop down to low speed for the remainder of the programmed low speed time period. While this time clock will override the high speed timeclock (see above), there are several reasons why the pump will automatically switch to high speed operation during this programmed time period. These include manual operation or heating operation.

For PS-4, Aux1 and Aux2 configurations are identical. For PS-8 models, Aux1 - Aux6 configurations are identical. For PS-16 models, Aux1 - Aux14 configurations are identical.

For one speed spa pumps, this is the second filter timeclock.

For two speed pumps, this timeclock will set the normal time period for spa filter pump low speed operation.

This selection affects ALL of the timeclock logic in the Aqua Logic. If “7-day” is selected, each timeclock will have one set of turn-on/tum-off settings that operate every day of the week. If “Weekend/Weekdays” option is selected then the user can enter one set of turn-on/tum-off times for the weekend (fixed as Saturday/Sunday) and another set of turn-on/tum-off times for weekdays (Monday through Friday).

This menu will appear only if the Aux1 is configured for timeclock. The Aux1 output will turn on and off at the designated times. If the Aux1 relay is off during the programmed on time—note that some pool equipment (example pressure side pool cleaner) can only be operated when the filter pump is running and the pool/spa valves are in the pool-only position—the Aqua Logic will keep the relay off until these other conditions are suitable for operation. If the Aux1 relay is on during the programmed off time, it may be because of freeze protection. Also, manual operation overrides the timeclock. Refer to page 11 for general notes regarding timeclock programming.

This menu will appear only if the Aux1 is configured for countdown timer. This setting is the time after you manually turn on the Aux1 relay until the Aqua Logic automatically turns off the relay. You can also manually turn off the relay at an earlier time by pressing the AUX1 button.
or

Aqua Logic functions are to be controlled in the group. The group will turn on and off based on this selection. Before assigning and configuring all the desired functions and their control parameters, the group itself must be configured. The options for controlling groups are Manual On/Off, Countdown Timer, and Timeclock. The group will turn on and off based on this selection.

When setting up a Group function in the Configuration Menu, the first menu allows you to select the control parameter (how the group is activated and de-activated) and the second menu allows you to select which Aqua Logic functions are to be controlled in the group.

**Group Function**

The latest version of the Aqua Logic offers the ability to assign a Group function to a particular button. Instead of a button controlling one particular function, the button can be programmed to initiate a sequence of commands that are programmed in the Configuration Menu. For example, instead of the Lights button turning on and off the pool light only, the button can be programmed to turn on the pool light, turn on the bug light, turn off the pool cleaner, turn on and dim the patio lights, turn on the music, etc. all at the same time. This convenient feature is offered on all Aux buttons, both Valve buttons and the Lights button. Refer to this section when programming Group commands.

Before assigning and configuring all the desired functions and their control parameters, the group itself must be configured. The options for controlling groups are Manual On/Off, Countdown Timer, and Timeclock. The group will turn on and off based on this selection.

NOTE: The configurations for Valve3 and Valve4 are identical. However, if Heater2 was enabled, then the Valve4 configuration will not appear (a single relay is used to implement either the Heater2 function or the Valve4 function—it can not do both).

**NOTE:** The configurations for Valve3 and Valve4 are identical. However, if Heater2 was enabled, then the Valve4 configuration will not appear (a single relay is used to implement either the Heater2 function or the Valve4 function—it can not do both).

or

This menu will appear only if Valve3 is configured for timeclock. The valve will rotate on and off at the designated times.

This menu will appear only if Valve3 is configured for countdown timer. This setting is the time after you manually turn on the valve3 relay until the Aqua Logic automatically turns off the relay. You can also manually turn off the valve with an earlier time by pressing the VALVE3 button.

This menu allows the user to map each button of the AQL-SS-D to one of the standard Aqua Logic functions. The default selections are: Button 1 - Pool/Spa, Button 2 - Filter, Button 3 - Lights, Button 4 - Heater1, Button 5 - Aux1 and Button 6 - Aux2.

**NOTE:** The configurations for Valve3 and Valve4 are identical. However, if Heater2 was enabled, then the Valve4 configuration will not appear (a single relay is used to implement either the Heater2 function or the Valve4 function—it can not do both).

NOTE: The configurations for Valve3 and Valve4 are identical. However, if Heater2 was enabled, then the Valve4 configuration will not appear (a single relay is used to implement either the Heater2 function or the Valve4 function—it can not do both).

or

This menu will appear only if Valve3 is configured for timeclock. The valve will rotate on and off at the designated times.

This menu will appear only if Valve3 is configured for countdown timer. This setting is the time after you manually turn on the valve3 relay until the Aqua Logic automatically turns off the relay. You can also manually turn off the valve with an earlier time by pressing the VALVE3 button.

This menu allows the user to map each button of the AQL-SS-D to one of the standard Aqua Logic functions. The default selections are: Button 1 - Pool/Spa, Button 2 - Filter, Button 3 - Lights, Button 4 - Heater1, Button 5 - Aux1 and Button 6 - Aux2.

**NOTE:** The configurations for Valve3 and Valve4 are identical. However, if Heater2 was enabled, then the Valve4 configuration will not appear (a single relay is used to implement either the Heater2 function or the Valve4 function—it can not do both).

NOTE: The configurations for Valve3 and Valve4 are identical. However, if Heater2 was enabled, then the Valve4 configuration will not appear (a single relay is used to implement either the Heater2 function or the Valve4 function—it can not do both).

Super Chlorinate

24 hours

Adjust Superchlorination period (1 - 96 hours)

Move to previous/next menu item

Larger pools or when you have an unusually high bather load, a large amount of rain, a cloudy water condition, or any other condition that requires a large amount of chlorine to be introduced to the pool, may require more hours of Superchlorination. Smaller pools require less hours of Superchlorination.

**Remote Menus**

**Enabled**

**Disabled**

This feature will prevent unauthorized access to the Settings, Timers, and Configuration menus from any of the Aqua Logic’s remote display/keypads. When disabled, the remote display/keypads will only show the default menu and allow on/off control via the pushbuttons. Note that the function of the Aqua Logic’s built-in display/keypad is unchanged by this selection. Once disabled, the only way to enable “Remote Menus” is to use the local display/keypad.

**Select 6B Spa**

This menu only appears if more than one AQL-SS-6B is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select 6B Spa**

This menu only appears if more than one AQL-SS-D is connected. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select 6B Spa**

This menu only appears if more than one AQL-SS-6B is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.

**Select Digital Spa**

This menu only appears if more than one AQL-SS-D is detected at power up. Select which of the available remote controls (A, B or C) is to be configured.
Water. IMPORTANT: this only enables operation of the valve output during freeze—see the protection temperature, the Aqua Logic will turn on the valve to allow circulation of the water. When the sensor falls below the selected freeze temperature, the valve3 button is activated and the AIR temperature falls below the “Solar Config., menu for proper operation to occur.

In-Floor Cleaner— the valve switches the water returning to the pool between the in-floor cleaner and the normal return jets which facilitate efficient surface skimming. The valve will operate the in-floor cleaner for the first half of each clock hour and then switch to the jets/skimming for the last half of the hour.

Group — the valve operates when the Group function is initiated and shuts off when the Group function is terminated. See valve3 Group section for operation information for the Group function.

Super Chlorinate – The Super Chlorinate function can be assigned to any Aux, Lights or Valve button. This allows the user to simply hit a button to start a Super Chlorinate cycle, rather than using the Settings Menu. Note that only one button can be assigned to this function.

Valve3 Interlock
If “Enabled”, this feature will override the function (timeclock, manual on/off, countdown timer or in-floor cleaner) selected above and turn the valve off whenever the filter pump is off or the pool/spa suction/return valves are set to “spa only” or “spillover” operation. Interlock is not available with solar or group.

Valve3 Group
This function allows the user to perform multiple tasks with a single push of the Valve3 button. When setting up a Group function, refer to page 22 for specific programming information. There are two Group menus; the first menu determines how the group command will be initiated (Manual On/Off, Countdown Timer, or Timeclock) and the second menu selects the desired functions and their respective control parameters.

When activating Group functions, be aware that the most recent Group function that is initiated will override any previous Group function.

Valve3 Freeze Protection
This function protects the pool and plumbing equipment against freeze damage. If Freeze Protection is enabled and the AIR temperature falls below the selected freeze temperature; the Aqua Logic will turn on the valve to allow circulation of the water. IMPORTANT: this only enables operation of the valve3 output during freeze—see the “Filter Pump Config.” menu to enable freeze protection for the main circulation system. Freeze protection is not available for group functions.

A table of functions and their corresponding control parameters are listed below.

<table>
<thead>
<tr>
<th>Function</th>
<th>Control Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool/Spa</td>
<td>Unaffected, Pool only, Spa only, or Spillover</td>
</tr>
<tr>
<td>Pool Filter</td>
<td>Unaffected, Off, On, High speed, or Low speed</td>
</tr>
<tr>
<td>Lights (standard relay)</td>
<td>Unaffected, Off, or On</td>
</tr>
<tr>
<td>Lights (solar relay)</td>
<td>Unaffected, Off, On, 100%, 80%, 60%, 40%, or 20%</td>
</tr>
<tr>
<td>Spa Filter</td>
<td>Unaffected, Off, On, High speed, or Low speed</td>
</tr>
<tr>
<td>Aux1-14 (standard relay)</td>
<td>Unaffected, Off, or On</td>
</tr>
<tr>
<td>AUX1-14 (solar relay)</td>
<td>Unaffected, Off, On, 100%, 80%, 60%, 40%, or 20%</td>
</tr>
<tr>
<td>Valve3</td>
<td>Unaffected, Off, or On</td>
</tr>
<tr>
<td>Valve4</td>
<td>Unaffected, Off, or On</td>
</tr>
<tr>
<td>Spa Htr1 Set</td>
<td>Unaffected, Off, 65º-104ºF</td>
</tr>
<tr>
<td>Pool Htr1 Set</td>
<td>Unaffected, Off, 65º-104ºF</td>
</tr>
<tr>
<td>Spa Htr2 Set</td>
<td>Unaffected, Off, 65º-104ºF</td>
</tr>
<tr>
<td>Pool Htr2 Set</td>
<td>Unaffected, Off, 65º-104ºF</td>
</tr>
<tr>
<td>Spa Solar Set</td>
<td>Unaffected, Off, 65º-104ºF</td>
</tr>
<tr>
<td>Pool Solar Set</td>
<td>Unaffected, Off, 65º-104ºF</td>
</tr>
<tr>
<td>SuperChlr</td>
<td>Unaffected, Off, On</td>
</tr>
</tbody>
</table>

Note that all functions in the table may not be offered. The available functions are dependent on how the Aqua Logic is configured. For example, if the Aqua Logic is configured for a single heater, “Heater2” will not be available as an option in the Group menu. Also, under some circumstances, functions will be displayed but can’t be changed. Note that the function whose menu you are in, will not be displayed as an option and will automatically turn on when the group is activated. For example, if programming a Group function under the Lights menu, the Lights function will not be offered as an option and the Lights function will automatically turn on with the group.

The available control parameters vary with each function. All functions offer “Unaffected”, which should be selected if you do not wish to control that particular function within the group. All other parameters will depend on the particular function selected.

When activating Group functions, be aware that the most recent Group function that you activate will override any previous Group functions.

Heater Setpoints in Groups
The Aqua Logic can be programmed to use alternate heater setpoints (conventional and/or solar) while running group commands. This allows the heater to be set to a higher or lower temperature than normal, while the group is activated. When the group stops, the setpoint will return to its normal setting.

Changing the setpoint while the Group is running will make the Group release the alternate setpoint control and revert back to the normal heater setting. Any changes that are made at that point will affect the normal heater setting. The next time the Group is activated, the temperature will return to the group setpoint that was originally programmed in the Configuration Menu. To change the setpoint while the Group is running, go to the Settings menu and press the “+/-” button while “Group Control” is displayed. The setpoint will change and be retained as the new normal heater setpoint.
Super Chlorinate
The Aqua Logic can be programmed to Super Chlorinate the pool or spa while running a group command. When the Group starts, the Super Chlorinate cycle will begin. Super Chlorinate will continue until the preset time expires (see Timers Menu/Super Chlorinate Hours) or until the Group turns off. Changing the Super Chlorinate state using the Settings Menu, the Aqua Pod Super Chlorinate button, or a Super Chlorinate assigned Aux/Lights/Valve button will temporarily cancel the Group’s control of Super Chlorinate until the next time the Group is activated.

PS-8 and PS-16 Virtual Models
Aqua Logic Virtual models are similar to standard PS models, but offer additional auxiliary outputs with limited functionality. The AQL-PS-8-V is similar to the AQL-PS-4 with 4 additional Aux outputs. The AQL-PS-16-V is similar to the AQL-PS-8 with 8 additional outputs. The additional aux outputs on virtual models can only be assigned to the Super Chlorinate function (if the Chlorinator is enabled) or to a Group function. Refer to the following programming information when assigning functions to the virtual auxiliary outputs.

Configuration Menus
Each item needs to be programmed and may contain additional sub-menu items. Refer to the following pages for information on programming.

Chlorinator
If the chlorinator is enabled (requires the use of the AQL-CL chlorination kit), then the cell and flow switch must also be installed and the Aqua Logic will automatically chlorinate both the pool and spa according to the desired output setting (see Settings Menu in the Operation manual). If disabled (default), then neither the cell nor flow switch need to be installed and all displays relating to the chlorinator will be suppressed.

When the chlorinator is enabled, the Aqua Logic will automatically detect and control any Aqua Rite(s) that is installed in the system (see page 21).

Display
Allows for the display of salt (default) or mineral values.

Cell Type Selection
The Cell Type Menu appears after “Display Salt/Minerals” in the Chlorinator Configuration Menu. The options are T-CELL-5 or T-CELL-15 (default). Make the proper selection based on the electrolytic cell that is used in your system. For pools up to 20,000 gallons, the T-CELL-5 is typically used. The T-CELL-15 is for pools up to 40,000 gallons.

AQL-PS-8-V models only: Aux7 - Aux14 only
AQL-PS-16-V models only: Aux7 - Aux14 only

For more information on the Group function, refer to page 22 in the Installation Manual. If neither Super Chlorinate or a Group can be assigned to a Virtual Aux button, the following will be displayed:

NOTE: The configuration for Valve3 and Valve4 are identical. However, if Heater2 was enabled, then the Valve4 configuration will not appear (a single relay is used to implement either the Heater2 function or the Valve4 function—it can not do both). For PS-16, see aux logic on page 31 for control of Valves 7, 8, 9 and 10.

Valve3 Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Cleaner Valve, Waterfall valve, Solar Valve, etc.) to each of the valve output control function. This will make the Aqua Logic much more user friendly to the homeowner when they want to turn various valves on or off or program the timeclocks. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that the “Valve3” (and “Valve4”) pushbutton can be labeled the same as the name that you have assigned.

Valve3 Function
Manual On/Off (default) – the valve3 relay will alternate between turning on and off when the VALVE3 button is pressed. There is no automatic control logic. The VALVE3 button can also be used to turn the valve output on or off.
Low Speed of a 2-Speed Spa Filter Pump – the Aqua Logic will operate the aux relay whenever the low speed operation of the filter pump is required. It is very important that the “2-speed” filter pump option be selected under the “Filter Pump Config.” menu for proper operation.

TimerLock – the aux relay will turn-on and turn-off at the times set for the aux timer/config in the Timers Menu (see Operations Manual). The AUX button can also be used to turn the output on and off.

Solar – The aux relay operates a solar booster pump which will turn on when the filter pump is running and solar heat is available and the water is less than the desired temperature setting. It is important to note that “Solar” must be enabled in the “Solar Chlorinate” menu for proper operation to occur.

Low Speed of a 2-Speed Spa Filter Pump – the Aqua Logic will turn on the aux relay whenever the low speed operation of the Dual Equipment Spa filter pump is required. “Pool and Spa-Dual” (located in Pool/Spa Setup menu) and “2-Speed” (located in Spa Filter Config. menu) must be selected for proper operation.

Group – the aux relay operates when the Group function is initiated and shuts off when the Group function is terminated. See Aux I Group section for operation information for the Group function.

Super Chlorinate – The Super Chlorinate function can be assigned to any Aux, Lights or Valve button. This allows the user to simply hit a button to start a Super Chlorinate cycle, rather than using the Settings Menu. Note that only one button can be assigned to this function.

Aux1 Relay
This feature allows the user to select either “Standard” (default) or “Dimmer” type relay for the Aux1 output. The optional AQL-DIM dimmer kit must be installed if “Dimmer” is desired. When “Dimmer” is selected, and the Aux1 output is manually turned on, the “+” and “-” buttons adjust the level from 20% to 100% (default). The level is saved for the next time the Aux1 output is turned from off to on.

Aux1 Interlock
If “Enabled”, this feature will override the function (Manual On/Off, Countdown Timer, TimerLock), selected above and turn the aux off when: filter pump is off, first 3 minutes of filter pump operation (allows the pump to prime and get water flowing), when the pool/spa suction return valves are in any position other than “pool only”, or for the first 3 minutes after solar turns on (allows air in the solar panels to be purged). Interlock is not available for solar, low speed filter pump, dimmer, or group functions.

Aux1 Group
The Aux1 Group function allows the user to perform multiple tasks with a single push of the “Aux1” button. When setting up a Group function, refer to page 22 for specific programming information. There are two Group menus; the first menu determines how the group command will be initiated (Manual On/Off, Countdown Timer, or TimerLock) and the second menu selects the desired functions and their respective control parameters.

When activating Group functions, be aware that the most recent Group function that is initiated will override any previous Group function.

Aux1 Freeze Protection
This function protects the pool, plumbing, and equipment against freeze damage. If Freeze Protection is enabled and the AIR temperature sensor falls below the selected freeze protection temperature, the Aqua Logic will turn on the aux relay to circulate the water. IMPORTANT: This only enables operation of the AUX output during freeze—see the “Filter Pump Config.” menu to enable freeze protection for the main circulation system. Freeze Protection is not available for low speed filter pump, dimmer, or group functions.
when the super-chlorinate function is turned on. The valves will remain in this position for the remainder of the super-chlorinate period. This option is usually preferable because both the pool and spa water will be filtered and sanitized.

If “Pool Only” is selected, then the Aqua Logic will switch the pump/spa valves to the “pool only” position at the start of the programmed pool filtering time period or when the super-chlorinate function is turned on. This may be desirable on some systems with in-floor cleaners because it allows the cleaner to operate all the time the pool is being filtered and/or the super chlorinate is running.

V1=Aux1, V2=Aux2
This menu appears only if the Pool/Spa Setup is “Pool Only” or “Spa Only”. When enabled, Valve 1 (return) will follow the Aux 1 output and Valve 2 (suction) will follow the Aux 2 output. When disabled (default), the return and suction pump/spa valves function normally.

Filter Off Valve Change
This menu appears only if Pool/Spa setup is set to “Pool and Spa”. When enabled (default), the filter pump will shut off for 35 seconds whenever the Pool/Spa valves are turning. The pump will NOT shut off when the heater has Cooldown enabled and is either on or in the Heater Cooldown mode.

Filter Pump
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that the “Aux” pushbutton can be labeled the same as the name that you have assigned.

Filter Pump
For 2-speed pumps: When a 2-speed pump is configured, one of the AUX relays must also be configured to control the low speed motor winding on the pump (see page 14 for wiring and page 31 for AUX configuration). See the Operation manual for specific information regarding the control logic for 2-speed pump operation.

Flow Monitor
This feature will help protect the filter pump from damage due to no flow. When used with a Goldline flow switch, the Aqua Logic monitors the state of water flow when the filter pump is on. If no flow is detected for more than 15 minutes, the Aqua Logic will shut down the pool pump and the “Check System” LED will indicate an error. The error will be cleared the next time the pump is turned on.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Filter Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Filter Pump, Pool Filter, Spa Filter, etc.) to the filter relay. This will make the Aqua Logic much more user friendly to the homeowner when they want to control the filter equipment. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned. and page 31 for AUX configuration). See the Operation manual for specific information regarding the control logic for 2-speed pump operation.

Freeze Protection
Freeze protection is used to protect the spa and plumbed equipment against freeze damage. If freeze protection is enabled and the AIR temperature sensor falls below the freeze threshold (selectable in Filter Pump Configuration Menu - page 25), the Aqua Logic will turn on the spa filter pump to circulate the water.

NOTE: The configuration parameters for all Aux outputs are same as shown below for Aux1, PS-4, Aux1 and Aux2, PS-8, Aux1 through Aux6. PS-16: Aux1 through Aux14. Also note that for the PS-16, Aux7, 8, 9 and 10 are turned Off/On with the control function selected for Aux7, 8, 9, and 10, respectively.

| Aux1 Config + to view/change | Push to access Aux options
| Aux1 Name Cleaner | Rotate between all available names
| Aux1 Function Manual On/Off (default) | Move to next function item
| Aux1 Group Timer, Dimmer, General | Options available depend on the function that is selected
| Aux1 Function Timeclock, Solar, Low speed, Spa Filter, Group & Super Chlorinate | Move to previous function item or next configuration menu
| Aux1 Freeze Disable | Move to previous configuration menu

NOTE: If “Pool and Spa-Dual” is selected, Aux1 is dedicated to use as the spa filter. Its Name is set to Spa Filter, the Function is set to Timeclock and Interlock is set to Disabled. These can’t be changed.

AUX1 Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Cleaner Pump, Waterfall, Gazebo Light, etc.) to each of the aux outputs control function. This will make the Aqua Logic much more user friendly to the homeowner when they want to turn on various aux equipment on or off or program the timeclocks. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that the “Aux” pushbutton can be labeled the same as the name that you have assigned. At this time it is also a good idea to make sure that the relay in the control box is also labeled (hand written) with the same name as a help to technicians who may service this system at a later date.

AUX1 Function
Manual On/Off (default)—the aux relay will alternate between turning on and off when the aux button is pressed. There is no automatic control logic.

Countdown Timer – the aux relay will turn on when the AUX button is pressed and then will turn off automatically after a programmed time (see Timers Menu in the Operations Manual). The AUX button can also be used to turn the output off.

WARNING: Do not use the Aqua Logic to control an automatic pool cover. Swimmers may become entrapped underneath the cover.

NOTE: If “Pool and Spa-Dual” is selected, Aux1 is dedicated to use as the spa filter. Its Name is set to Spa Filter, the Function is set to Timeclock and Interlock is set to Disabled. These can’t be changed.

AUX1 Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Cleaner Pump, Waterfall, Gazebo Light, etc.) to each of the aux outputs control function. This will make the Aqua Logic much more user friendly to the homeowner when they want to turn on various aux equipment on or off or program the timeclocks. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that the “Aux” pushbutton can be labeled the same as the name that you have assigned. At this time it is also a good idea to make sure that the relay in the control box is also labeled (hand written) with the same name as a help to technicians who may service this system at a later date.

AUX1 Function
Manual On/Off (default)—the aux relay will alternate between turning on and off when the aux button is pressed. There is no automatic control logic.
Solar – the lights relay can operate a solar booster pump which will turn on when the filter pump is running and solar heat is available and the water is less than the desired temperature setting. It is important to note that “Solar” must be enabled in the “Solar Config” menu for proper operation to occur.

Low Speed of a 2-Speed Spa Filter Pump – the Aqua Logic will turn on the lights relay whenever the low speed operation of the Dual Equipment Spa Filter pump is required. “Pool and Spa-Dual” (located in Pool/Spa Setup menu) and “2-Speed” (located in Spa Filter Config. menu) must be selected for proper operation.

Group – the lights relay operates when the Group function is initiated and shuts off when the Group function is terminated. See Lights Group section for operation information for the Group function.

Super Chlorinate – The Super Chlorinate function can be assigned to any Aux, Lights or Valve button. This allows the user to simply hit a button to start a Super Chlorinate cycle, rather than using the Settings Menu. Note that only one button can be assigned to this function.

Lights Relay
This feature allows the user to select either “Standard” (default) or “Dimmer” type relay for the Lights output. The optional AQL-DIM dimmer kit must be installed if “Dimmer” is desired. When “Dimmer” is selected, and the Lights output is manually turned on, the “+” and “-” buttons adjust the level from 20% to 100% (default). The level is saved for the next time the lights are turned off to on.

Lights Interlock
If enabled, this feature will override the function (Manual On/Off, Countdown Timer, Timeclock) selected above and turn the lights relay off when: filter pump is off, first 3 minutes of filter pump operation (allows the pump to prime and get water flowing), when the pool/spa suction return valves are in any position other than “pool only”, or for the first 3 minutes after solar turns on (allows air in the solar panels to be purged). Interlock is not available for solar, low speed filter pump, dimmer, or group functions.

Lights Group
The Lights Group function allows the user to perform multiple tasks with a single push of the “Lights” button. When setting up a Group function, refer to page 22 for specific programming information. There are two Group menus; the first menu determines how the group command will be initiated (Manual On/Off, Countdown Timer, or Timeclock) and the second menu selects the desired functions and their respective control parameters.

When activating Group functions, be aware that the most recent Group function that is initiated will override any previous Group function.

Lights Freeze Protection
This function helps protect equipment that is wired to the lights relay against freeze damage. If Freeze Protection is enabled and the AIR temperature sensor falls below the selected freeze temperature threshold, the Aqua Logic will energize the lights relay. IMPORTANT: this only enables operation of the lights relay during freeze—see the “Filter Pump Config.” menu to enable freeze protection for the main circulation system. Freeze Protection is not available for low speed filter pump, dimmer, or group functions.

If “Pool & Spa Dual” is selected
Push to access Spa Filter options
Move to previous/next configuration menu item

Spa Filter Pump
1 Speed
Toggle between 1 speed (default) and 2 speed options
Move to next menu item

Freeze Protect
Enabled
Toggle between Enabled (default) and Disabled Freeze Protection
Move to previous/next configuration menu

Spa Filter Pump
For 2-speed pumps: When a 2-speed pump is configured, one of the AUX relays must also be configured to control the low speed motor winding on the pump (see page 15 for wiring

Freeze Protection
Freeze protection is used to protect the pool and plumbing equipment against freeze damage. If freeze protection is enabled and the AIR temperature sensor falls below the freeze threshold (see below), the Aqua Logic will turn on the filter pump to circulate the water. If “Pool and Spa” is selected in the Pool/Spa sub-menus (see page 24), the valves will alternate between the pool and spa every 30 minutes and the filter pump will turn off while the valves are turning. The chlorinator will not operate if freeze protection is the only reason the pump is running.

Freeze Protection Temperature
Select the temperature to be used for freeze protection. Temperature is adjustable from 33°F - 42°F (1ºC - 6ºC). 38ºF (3ºC) is default. This threshold will be used for all outputs that have freeze protection enabled.

NOTE: Heater 1 and Heater 2 configuration are identical. If Heater 2 is enabled then Valve4 will automatically be disabled due to the fact that they use the same output relay and only 1 function can be assigned to that relay.

Heater1
If the heater is “Enabled”, the heater relay will turn on when the water temperature is less than the desired temperature setting and the filter pump is running. The desired temperature setting is in the “Settings Menu”. If applicable, the homeowner will be prompted to enter separate “pool” and “spa” settings. Depending on the position of the pool/spa suction valves, the proper temperature setting will be used.

Heater Name
The Aqua Logic allows you to assign any one of a number of names (e.g. “Gas Heater, Heat Pump, etc.) to each of the heater control functions. This will make the Aqua Logic much more user friendly to the homeowner when they want to turn various heaters on or off or set temperatures. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that appropriate pushbuttons can be labeled the same as the name that you have assigned.

Heater Cooldown
This feature ensures that the heater cools down before water circulation is stopped. When enabled, the Aqua Logic will continue to run the filter pump for 5 minutes after the heater turns off. During this period the filter pump LED will flash and also a “Heater Cooldown, X:XX remaining” message will scroll on the display.

When the filter pump is running and the heater is on: Pressing the “Filter” button once will cause the heater to turn off, but the filter pump will continue to run for heater cooldown (filter LED flashing and message on display). Pushing the filter button a second time will override the heater cooldown operation and turn the filter pump off.
For a Pool/Spa Setup selection of “Pool Only”, “Spa Only” or “Pool and Spa-Dual”, Heater1 and/or Heater2 cooldown affect the filter pump. For “Pool and Spa-Dual”, Heater1 is associated with the spa filter and Heater2 with the pool filter.

**Heater Extend**

If “Enabled”, the filter extend logic keeps the filter pump running beyond the normal turn-off time until the pool (or spa) is heated up to the desired temperature setting (see Settings Menu). Heater extend will NOT cause the filter pump to turn on, it will only delay the turn off time when the heater is operating.

For a Pool/Spa Setup selection of “Pool Only”, “Spa Only” or “Pool and Spa-Dual”, Heater1 and/or Heater2 will keep the filter pump running. For “Pool and Spa-Dual”, Heater1 will keep the spa filter running and Heater2 will keep the pool filter running.

**Allow Low Speed**

This menu only appears if the pool filter is configured for 2-speed operation. During default operation, high speed mode is used whenever the heater is on. If Allow Low Speed is enabled, low speed will be allowed even if the heater is on.

**Solar**

The Solar configuration menu will NOT appear if “Pool and Spa - Dual” has been selected in the Pool/Spa setup menu. If the solar control logic is “Enabled”, several additional steps must be taken to ensure proper operation of the solar heating system. If the solar is operated by a valve, then a valve (Valve3 or Valve4) output must be setup for solar logic (page 29). If the solar is operated by a pump, then one of the AUX relays must be set up for solar logic (page 31). Also, the “solar” temperature sensor must be installed. This sensor is typically mounted near the collector array and is used to sense whether sufficient solar heat is available.

If solar is “Enabled”, the valve or solar pump relay will turn on when the water temperature is less than the desired temperature setting AND the solar sensor is hotter than the water by at least 8ºF. The desired temperature setting is in the “Settings Menu”. If applicable, the homeowner will be prompted to enter separate pool and spa desired temperature settings. Depending on the position of the pool/spa suction valve, the proper temperature setting will be used.

**Solar Extend**

If “Enabled”, the filter extend logic keeps the filter pump running beyond the normal turn-off time if solar heat is still available. When solar heat is no longer available, both the solar valve/pump and filter pump will turn off simultaneously. Solar extend will NOT cause the filter pump to turn on, it will only delay the turn off time when solar is operating.

**Solar Priority**

If both “Solar Control” and “Heater Control” are enabled, the Solar Priority feature will keep the conventional heater off whenever solar heat is available. This provides the most cost effective way of heating the pool. When solar heat is not available, the conventional heater will operate normally.

---

### Lights Menu

#### Lights Config.

- Push to access solar options
- Move to previous/next configuration menu
- Toggle between Enabled and Disabled (default)
- Move to previous/next configuration menu

#### Solar

- Disabled
- “Solar” is enabled
- Solar Extend
- “Solar” is enabled
- Solar Priority
- Disabled

#### Lights Freeze

- Enable
- Disable

#### Lights Name

- Pool Light
- Spa Light
- Standard
- Dimmer

#### Lights Group

- Filter: Unaffected
- Pool: Unaffected
- Spa: Unaffected

#### Lights Interlock

- Toggle between Enabled and Disabled (default)
- Move to previous/next configuration menu

#### Lights Relay

- Standard

#### Lights Function

- Manual On/Off
- Countdown Timer
- Solar
- Low-Speed-Spa Filter
- Group
- Super Chlorinate

#### Lights Freeze

- Not Appearing

---

### Lights Menu

#### Lights Config.

- Push to access options
- Move to previous/next configuration menu

#### Lights Name

- Rotate between all available names
- Move to previous/next configuration menu

#### Lights Function

- Rotate between Manual On/Off (default), Countdown Timer, Solar, Low-Speed-Filter, Timeclock, Solar, Low-speed Spa Filter, Group, and Super Chlorinate
- Move to previous/next configuration menu

#### Lights Freeze

- Not active

---

### Lights Function

#### Lights Name

The Aqua Logic allows you to assign any one of a number of names (e.g. “Pool Light, Spa Light, Deck Light, etc.) to this control function. Note that other lights may be assigned to other Aux outputs. This will make the Aqua Logic much more user friendly to the homeowner when they want to turn various lights on or off. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that the “Lights” pushbutton can be labeled the same as the name that you have assigned. At this time it is also a good idea to make sure that the relay in the control box is also labeled (hand written) with the same name as a help to technicians who may service this system at a later date.

#### Lights Freeze

Although designated as the “Lights” output, the function of the lights relay is similar to the Aux relays. If pool lights are wired to the lights relay, some options including Solar function, Low Speed of a 2-Speed Filter Pump, Lights Interlock and Lights Freeze Protection are not applicable and should be disabled. If no pool lights are used, the lights relay can be used to control other pool devices that may require these options. The function of each option is shown below.

**Manual On/Off**—the lights relay will alternate between turning on and off when the LIGHTS button is pressed. There is no automatic control logic.

**Countdown Timer**—the lights relay will turn on when the LIGHTS button is pressed. The lights relay will turn off automatically after a programmed time (see Timers Menu in Operation Manual). The LIGHTS button can also be used to turn the output off.

**Low Speed of a 2-Speed Filter Pump**—the Aqua Logic will turn on the lights relay whenever the low speed operation of the filter pump is required. It is very important that the “2-Speed” filter pump option be selected under the “Filter Config.” Menu for proper operation.

**Timeclock**—the lights relay will turn on and turn off at the times set for the lights timeclock in the Settings Menu (see Settings Menu in Operation Manual). The LIGHTS button can also be used to turn the output on and off.