ECOMMAND 4 Programming Flow Chart

**Default Menu**
- Day and time
- Water temperature
- Chlorinator setting
- Salt level
- Reason pump is running (not scheduled)
- Reason hi-speed is running (not scheduled)
- Counterflow line running
- Heater control status
- System manual off
- Check system error
- Filter speed

**Settings Menu**
- Spa heater temperature
- Pool heater temperature
- Spa valve setting
- Pool valve setting
- Spa micro-switch setting
- Pool micro-switch setting
- Spa high/low speed
- Pool high/low speed
- Day and hi
- Spas display light
- Beeper
- Teach wireless remote
- Wireless channel

**Timers Menu**
- Pool filter pump 1 or 2-speed
- Pool filter pump 3 or 4-speed
- Spa
- Lights
- Aux1
- Aux2
- Valve3
- Superchlorinate

**Diagnostic Menu**
- Salt level
- Water sensor
- Air sensor
- Solar sensor
- Main software revision
- Display software revision
- User upgrade software revision
- RF base software revision

**Configuration Menu**
- Chlorinator
- Pushpin
- Line
- Lights
- Valve
- Aux1
- Aux2
- Valve3
- 7-day or weekend/weekday timeclock
- 12 hour or 24 hour time format
- % or °C
- Return to default

---

**Denotes conditional items**
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.

- A wire connector is provided on this unit to connect a minimum 8 AWG (8.4 mm²) solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5m) of the unit, to connect the equipment assembly or spa to a circuit protected by a ground-fault circuit-interrupter.

- 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**

---

**LIMITED WARRANTY (effective 03/01/12)** Hayward warrants its Pro Logic, OnCommand and E-Command pool automation products as well as its Aqua Rite, Aqua Rite Pro, Aqua Plus and SwimPure chlorination products to be free of defects in materials and workmanship, under normal use and service, for a period of three (3) years. Hayward also warrants its Aqua Trol chlorination products to be free of defects in materials and workmanship, under normal use and service for a period of one (1) year. These warranties are applicable from the initial date of purchase on private residential swimming pools in the US and Canada. Installations of product for use on commercial pools in the US and Canada is covered for a period of one (1) year for defects in materials and workmanship. Hayward warrants all accessories and replacement parts for the above-identified pool automation and chlorination products for a period of one (1) year. Accessories also include remotes, actuators, base stations, temperature sensors, flow switches and chemistry probes. Each of these warranties is not transferable and applies only to the original owner.

Hayward shall not be responsible for cartage, removal, repair or installation labor or any other such costs incurred in obtaining warranty replacements or repair.

Proof of purchase is required for warranty service. If written proof of purchase is not provided, the manufacturing date code will be the sole determinant of the date of installation of the product. To obtain warranty service or repair, please contact the place of purchase or the nearest Hayward authorized warranty service center. For more information on authorized service centers please contact the Hayward Technical Service Support Center (61 Whitecap Road, North Kingstown RI, 02852) or visit the Hayward web site at www.hayward.com.

**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 install, operate or maintain the product(s) in accordance with the recommendations contained in the owners manual(s).
4. Problems resulting from failure to maintain pool water chemistry in accordance with the recommendations in the owners 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.
6. Use of a non-genuine Hayward replacement salt chlorination cell on any Hayward automation or chlorination product will void the warranty for that product.

The express limited warranty above constitutes the entire warranty of Hayward Pool Products with respect to its products and is in lieu of all other warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose. In no event shall Hayward Pool products be responsible for any consequential, special or incidental damages of any nature. Some states do not allow a limitation on how long an implied warranty lasts, or the exclusion of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which vary from state to state.
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Before You Begin

What's Included
Before attempting to install the ECOMMAND 4 system, check that the following components have been included in the package:

ECOMMAND 4 Electronics Unit
(3) Temperature sensors with 15 ft. (5m) cable, hose clamp
(2) Goldline GVA-24 actuators (HPC-4-ACT, HPC-4-ACT-RC only)
(1) Goldline AQL2-BASE-RF/AQL2-SS-RF remote control (HPC-4-RC, HPC-4-ACT-RC only)

What's NOT Included
Some of the additional items that you may need to complete an installation include:

Circuit breakers
None are included with control—see page 6 and inside of door for suitable breakers

Wire
4-conductor cable (electronics unit to external chlorination)
Wire/conduit for 100A service from main panel to ECOMMAND 4
Wire/conduit for filter pump and other high voltage loads
Wire for bonding

Miscellaneous
Mounting hardware (screws, etc.) for mounting ECOMMAND 4
Valves (use standard Hayward, Pentair/Compool, or Jandy valves)
Additional valve actuators

Accessory Products - Order Separately
AQL2-SS-RF Wireless Spa Side Remote Control (Included with HPC-4-RC, HPC-4-ACT-RC)
AQL2-BASE-RF Base Station required if using AQL2-SS-RF (Included with HPC-4-RC, HPC-4-ACT-RC)
AQL-DIM Light Dimmer Relay
GVA-24 Valve Actuator
V&Axx Valve & Actuator (xx=1P (1.5“ pos. seal), -2P (2“ pos. seal), (Included with HPC-4-ACT, HPC-4-ACT-RC)

Installation Steps
Details on each installation step are presented on the following pages:

1. Mounting the equipment (page 2)
   ECOMMAND 4 main unit
   Temperature sensors
   Optional Remote Control
   Optional Base Station
   Valve actuators (if applicable)
   High Voltage pool equipment
   Low voltage wiring (temperature sensors, heater, etc.)
   4. ECOMMAND 4 configuration (page 14)

2. Plumbing (page 4)
   General Pool Equipment

3. Electrical Wiring (page 6)
   Main service
   Grounding and bonding
   Circuit breakers
   ECOMMAND 4 control power
   5. System Startup and checkout (page 24)
1. Mounting the Equipment

**ECOMMAND 4 Control Center**
The ECOMMAND 4 is contained in a raintight enclosure that is suitable for outdoor mounting. The control must be mounted a minimum of 5 ft. (2 meters) horizontal distance from the pool/spa (or more, if local codes require). The Control Center is designed to mount vertically on a flat surface with the knockouts facing downward. Because the enclosure also acts as a heat sink (disperses heat from inside the box), it is important not to block the four sides of the control. Do not mount the ECOMMAND 4 inside a panel or tightly enclosed area.

For more detailed instructions on control and operation of the ECOMMAND 4 system, refer to the Operation Manual.

**Temperature Sensors**
Three sensors are included with the ECOMMAND 4. A water sensor and an air sensor must be installed at all times for proper operation. A solar sensor is required if the solar function is enabled.

**Water Sensor**
This sensor is used to measure the pool/spa temperature and is installed in the filtration plumbing after the filter but before either the solar or conventionally fueled heaters—refer to the plumbing overview diagram.

1. Drill a 3/8" (10mm) diameter hole in the PVC piping and remove all chips and burrs.
2. Insert sensor until O-ring collar sits flush on the hole.
3. Position hose clamp over the sensor and gently tighten until O-ring makes an adequate seal. Do not overtighten.
4. For maximum temperature accuracy, cover the sensor and 3" (6cm) of pipe on either side with insulation and white paint.

**Air Sensor**
Mount the air sensor outdoors. IMPORTANT: Mount the air sensor out of direct sunlight.

**Solar Sensor**
For solar applications, mount the sensor near the solar collector array so that it is exposed to the same sunlight as the collectors. Use additional cable (20 AWG) if necessary.

**Optional AQL2-SS-RF Remote Control (included with HPC-4-RC, HPC-4-AC7-RC)**
The ECOMMAND 4 is compatible with AQL2-SS-RF wireless remote control only. The AQL2-SS-RF is a waterproof portable remote control that is designed to be used in and around the pool/spa area. The AQL2-SS-RF floats and can be left in the water for easy access. A single AQL2-BASE-RF Base Station must be installed on the ECOMMAND 4 in order to use this remote control. The maximum distance between the wireless remote and the base station on the ECOMMAND 4 main control unit is 400 feet (120m) line of sight or 200 feet (60m) through walls, etc. If in doubt about the distance, test operation before installing the remote. All wireless models require the user to run the “Teach Wireless” routine in the Settings Menu. This information can be found in the ECOMMAND 4 Operation Manual.
Optional Base Station *(included with HPC-4-RC, HPC-4-ACT-RC)*
The AQL2-BASE-RF optional base station must be installed if the AQL2-SS-RF is used. To install the base station, remove the knockout on the upper left side of the ECOMMAND 4 main control unit, insert the base station, and then tighten the nut from the inside. Also refer to the Base Station manual and the diagram on page 13.

Optional Valve Actuators *(included with HPC-4-ACT, HPC-4-ACT-RC)*
For optional actuators used with the ECOMMAND 4—note that the internal cams in the actuator may also have to be adjusted depending on the way the actuator is mounted on the valve and the desired valve action.

5. System Startup and Checkout

Before Startup
Before starting the ECOMMAND 4 for the first time, be sure that the following items have been completed:

1. Properly rated circuit breakers are installed in the ECOMMAND 4 subpanel.
2. All wiring is performed according to NEC and local codes.
3. The ECOMMAND 4 is properly grounded and bonded.
4. The ECOMMAND 4 is properly configured to control all desired functions.

Program Automatic Operation
Refer to the programming flow chart on the back cover of this manual for a listing of the available menus and the items included in each menu.

Settings Menu
Heater and/or solar thermostat settings
Chlorinator settings (if applicable)
Day and Time

Timers Menu
Timeclock and/or Countdown timer settings

Heater Checkout
Follow these instructions to verify that the ECOMMAND 4 is properly controlling the heater.

1. Check that the ECOMMAND 4 is calling for the heater to turn on as indicated by the “Heater” LED being illuminated. If the “Heater” LED is illuminated, go directly to step 2; if not, then check the following:
   - The heater is enabled (Configuration Menu/Heater Config.).
   - The heater temperature setting is at least 2°F greater than the water temperature (Settings Menu / Pool Heater & Spa Heater).
   - The filter pump is running.
   - If the pool has solar heat and the solar priority feature is enabled (Configuration Menu/Solar Config.) then solar must be off in order for the heater to fire. The easiest way to force solar off is to go to the Settings Menu / Pool Solar & Spa Solar and temporarily lower the temperature settings below the current water temperature.

2. Check that the heater is running. If not, then check:
   - Power is supplied to the heater.
   - The ECOMMAND 4 control output is properly connected to the heater control (see “Heater Control” wiring, page 8).
   - Some heaters also have internal switches or jumpers that have to be set correctly for remote control operation—refer to the heater manual and also “Heater Control” (page 8).
   - Heater is turned on (“Kill Switch” is in the “ON” position).
   - If a heater bypass valve is installed, check that water is flowing through the heater.
   - The heater temperature setting is set as high as possible (usually 104°F/40°C). Also note that some heat pumps actually have be set to the lowest possible temperature.
Valve3 Pump Speed
This is the speed of the pump when the Valve3 output is on. The choices are the Settings Menu speed and a speed that is unique to the Valve3 output only. The default selection is “Settings Menu”. This is the speed of the pump that has been selected in the Settings Menu for normal filter operation. If an alternate speed is desired when the Valve3 output is on, push “+” or “-” and select from “Lowest” to “Highest” in 5% increments.

- Toggle between 7-day (default) and Weekend/Weekday time options
- Move to previous/next configuration menu

This selection affects ALL of the timeclock logic in the ECOMMAND 4. If “7-day” is selected, each timeclock will have one set of turn-on/timer-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/timer-off times for the weekend (fixed as Saturday/Sunday) and another set of turn-on/timer-off times for weekdays (Monday through Friday).

- Toggle between 12 hour AM/PM (default) and 24 hour time format options
- Move to previous/next configuration menu

- Toggle between °F and PPM (default) and °C and g/L (Metric) options
- Move to previous/next configuration menu

Initiate reset of all configuration parameters
- Move to previous/next configuration menu (config. not reset)

Reset all configuration parameters
- Move to previous/next menu (config. not reset)

Move to previous/next configuration menu

Use this function to erase all previous system configuration and reset all configuration parameters back to the factory default values. This function is NOT reversible—be careful.

2. Plumbing

Pool/Spa system configuration
These systems use a single filter pump and filter. Pool or spa operation is controlled by two 3-way valves (suction and return). Refer to the diagram below.

Some important notes regarding the ECOMMAND 4 control of Standard Pool/Spa systems:

In Pool/Spa Config., select:

1. The ECOMMAND 4 can be programmed to accommodate spa spillover, if desired.
2. A conventional heater (gas or heat pump) and solar can be used to heat both the pool and the spa.
3. If the chlorinator cell is plumbed prior to the pool/spa return valve, then both the pool and the spa can be chlorinated (only when optional external chlorination is used).
4. The water sensor should be installed prior to any heater or solar and will display either the pool or the spa temperature, depending on the current operation of the pool. The temperature will only be displayed when the filter pump is running.
5. If any water feature or pressure side cleaner boost pumps are used, be sure to enable the “interlock” feature (see “Configuration Menu” for details) to ensure that the pumps operate only when the filter pump is on and the system is in the “pool only” operating mode.
6. The plumbing diagram above is intended to be used as a general guideline and is not a complete plumbing schematic for the pool.
7. The air sensor must be installed if the freeze protection feature is enabled for the filter, valves or aux outputs or if the chlorinator is enabled.
3. Electrical Wiring

The ECOMMAND 4 Control Center requires both high and low voltage connections. Low voltage connections will be made to actuators, sensors, remote keypad, etc. High voltage connections will be made to pumps, lights, etc., as well as providing direct input power to the Control Center. Always:
- Ensure that Power is disconnected prior to doing any wiring
- Follow all local and NEC (CEC if applicable) codes
- Use copper conductors only

Main Service (Power to the Circuit Breaker Subpanel)
The ECOMMAND 4 circuit breaker subpanel is rated for 100A service. Run properly rated conductors (L1, L2, N, and ground) from the primary house electrical panel to the main power connections on the ECOMMAND 4 circuit breaker base. The connection at the main house panel should be to a 240VAC circuit breaker rated at 100A maximum.

Grounding and Bonding
Connect a ground wire from the primary electrical panel to the ECOMMAND 4 ground bus bar. Also ground each piece of high voltage (120 or 240VAC) equipment that is connected to the ECOMMAND 4 control relays or circuit breakers. The ECOMMAND 4 should also be connected to the pool bonding system by an 8AWG (6AWG for Canada) wire. A lug for bonding (2 for Canada) is provided on the outside/bottom of the ECOMMAND-4 enclosure.

valve3 Function
Timeclock (default) – the valve turns on/off at the times set for the valve3 timeclock in the Timers Menu (see Operations Manual).
Solar – the valve operates when the filter pump is running and solar heat is available and the water is less than the desired temperature setting. Solar heating must be enabled in 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.
Valve3=Filter – the valve operates whenever the Filter relay is on.
Valve3=Lights – the valve operates whenever the Lights relay is on.
Valve3=Aux1 – the valve operates whenever the Aux1 relay is on.
Valve3=Aux2 – the valve operates whenever the Aux2 relay is on.

Valve3 Interlock
If “Enabled”, this feature will override the function (timeclock or in-floor cleaner) selected above and turn the valve off when: the filter pump is off, first 3 minutes of filter pump operation (allows the pump to prime and get water flowing), 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 or super chlorinate.

Valve3 Freeze Protection
This function protects the pool and plumbed equipment against freeze damage. If Freeze Protection is enabled and the AIR temperature falls sensor falls below the selected freeze temperature threshold, the ECOMMAND 4 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.
Circuit Breaker Installation and Wiring

Circuit breakers are to be supplied by the installer. Refer to the circuit breaker chart below for a list of suitable circuit breakers that can be used. Follow the code and the circuit breaker manufacturer's rating requirements regarding the size and temperature rating for wiring. Note that some pool equipment may be required to be connected to ground fault circuit breakers—check local and NEC (CEC) codes.

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<tr>
<th>Manufacturer</th>
<th>Single</th>
<th>Double</th>
<th>Twin</th>
<th>Quad</th>
<th>GFCB</th>
<th>Filter Plates</th>
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<tr>
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<td>QP</td>
<td>OP</td>
<td>QT</td>
<td>QT</td>
<td>QPF</td>
<td>QF3</td>
<td>25lb-in</td>
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<tr>
<td>Murray</td>
<td>MP-T</td>
<td>MP-T</td>
<td>MHT</td>
<td>MHT</td>
<td>MP-GT</td>
<td>LX100FP</td>
<td>25lb-in</td>
</tr>
</tbody>
</table>

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, Operation Manual). The AUX button can also be used to turn the output on and off.
- **Low Speed of a 2-speed Filter Pump**—the ECOMMAND 4 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 Config." menu for proper operation.
- **Timeclock**—the aux relay will turn on and off at the times set for the aux1 timeclock in the Timers Menu. 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 Control” must be enabled in the “Solar Config.” menu for proper operation to occur.
- **Super Chlorinate**—if “Chlorinator” is enabled, this option allows the user to start a Super Chlorinate cycle when the Aux button is pressed, 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, Timeclock), selected above and turn the aux1 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, super chlorinate or dimmer.

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 temperature threshold, the ECOMMAND 4 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.

Aux1 Pump Speed

This is the speed of the pump when the Aux1 output is on. The choices are the Settings Menu speed and a speed that is unique to the Aux1 output only. The default selection is “Settings Menu”. This is the speed of the pump that has been selected in the Settings Menu for normal filter operation. If an alternate speed is desired when the Aux1 output is on, push “+” or “-” and select from “Lowest” to “Highest” in 5% increments.
High Voltage (120/240V) Pool Equipment

All ECOMMAND 4 relays are double pole (they make/break both “legs” of 240V circuits) and are rated at 3HP/30A at 240V (1½HP/30A at 120V). Refer to the diagram below for typical relay wiring.

**WARNING:** Do not use the ECOMMAND 4 to control an automatic pool cover. Swimmers may become entrapped underneath the cover.

Two speed filter pump: Requires 2 relays (FILTER plus one of the AUX relays) for proper operation of both speeds. **IMPORTANT:** Be sure to follow the wiring diagram below AND to configure the control logic according to the instructions on page 14.

**Lights:** A ground fault circuit breaker must be used to supply power for high voltage pool/spa lighting. Low voltage lights will require an external transformer. For lighting systems that have both a light source and color wheel, connect the light source to the “Lights” relay and then connect the color wheel to one of the AUX outputs.

**Super Chlorinate** – if “Chlorinator” is enabled, this option allows the user to start a Super Chlorinate cycle when the Lights button is pressed, 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, super chlorinate or dimmer.

**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 ECOMMAND 4 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.

**Lights Pump Speed**
This is the speed of the pump when the Lights output is on. The choices are the Settings Menu speed and a speed that is unique to the Lights output only. The default selection is “Settings Menu”. This is the speed of the pump that has been selected in the Settings Menu for normal filter operation. If an alternate speed is desired when the Lights output is on, push “+” or “−” and select from “Lowest” to “Highest” in 5% increments.

---

**NOTE:** The configuration parameters for the Aux2 output are the same as shown below for Aux1.
Allow Low Speed
This menu only appears if the pool filter is configured for 2-speed or variable speed operation. During default operation, high speed mode is used whenever the solar heater is on. If Allow Low Speed is enabled, low speed pump operation will be allowed during solar heating except for the first 3 minutes after solar heat turns on.

Lights Config.
- Push to access Lights options
- Move to previous/next configuration menu

Lights Function
- Rotate between Manual On/Off (default), Countdown Timer, Low Speed Filter, Timeclock, Solar, and Super Chlorinate
- Move to next menu item

Settings Menu
- Move to previous/next configuration menu

Low Voltage Wiring
Valve Actuators
The ECOMMAND 4 can control up to three automatic valve actuators. Two of the valve outputs are dedicated to the pool/spa suction (Valve2) and return (Valve1) valves. Valve3 is for general purpose use (solar, water feature, in-floor cleaner, etc.).

For installations with solar heating, Goldline offers the AQ-SOL-KIT-xx solar kit that contains a valve, actuator, and extra temperature sensor. The “xx” indicates the valve type from the 3 choices below:

-1P 1.5” Positive Seal
-2P 2” Positive Seal

The ECOMMAND 4 is compatible with standard valve actuators manufactured by Hayward, Pentair/Compool, and Jandy. See diagram on page 5 for the location of valve connectors.

Heater Control
The ECOMMAND 4 provides a set of low voltage dry contacts that can be connected to most gas heaters or heat pumps with 24V control circuits. Refer to the diagram on the following page for a generic connection. The manuals supplied with most heaters also include specific wiring instructions for connecting the heater to an external control (usually identified as “3-wire” remote control). For millivolt or line voltage heaters, contact Goldline Tech support, 908-355-7995. Refer to the diagrams and the information on the following pages for more details on the connection to several popular heaters.

Hayward Variable Speed Filter Pump: Proper installation of the Hayward TriStar Variable Speed Control (VSC) includes high voltage input wiring, communication wiring, and menu configuration/settings. Refer to the following diagram for proper input wiring to the VSC. Wiring from the 220V breaker must connect through the ECOMMAND 4’s Filter relay. The Filter relay is used to supply input power to the VSC pump control. The relay will be on when the filter pump output is on. When the filter pump output is off, the relay will be off. Note that when the filter pump relay is off (power off to the VSC), the ECOMMAND 4 will not display errors or diagnostics for the pump. The Filter pump relay must be on for diagnostic function.

220 VAC input power to VSC

Low Voltage Wiring
Valve Actuators
The ECOMMAND 4 can control up to three automatic valve actuators. Two of the valve outputs are dedicated to the pool/spa suction (Valve2) and return (Valve1) valves. Valve3 is for general purpose use (solar, water feature, in-floor cleaner, etc.).

For installations with solar heating, Goldline offers the AQ-SOL-KIT-xx solar kit that contains a valve, actuator, and extra temperature sensor. The “xx” indicates the valve type from the 3 choices below:

-1P 1.5” Positive Seal
-2P 2” Positive Seal

The ECOMMAND 4 is compatible with standard valve actuators manufactured by Hayward, Pentair/Compool, and Jandy. See diagram on page 5 for the location of valve connectors.

Heater Control
The ECOMMAND 4 provides a set of low voltage dry contacts that can be connected to most gas heaters or heat pumps with 24V control circuits. Refer to the diagram on the following page for a generic connection. The manuals supplied with most heaters also include specific wiring instructions for connecting the heater to an external control (usually identified as “3-wire” remote control). For millivolt or line voltage heaters, contact Goldline Tech support, 908-355-7995. Refer to the diagrams and the information on the following pages for more details on the connection to several popular heaters.
**Generic Heaters**

1. Wire heater to 120/240V power source per the instructions in the heater manual. The ECOMMAND 4 does NOT control the power going to the heater.
2. Wire the ECOMMAND 4 dry contact heater output per the diagram below. Many internal parts of the heater can get very hot—see the heater manufacturer’s recommendations on the minimum temperature rating for wires. If no guidance is given, use 105°C rated wire.
3. Set any ON/OFF switch on the heater to ON.
4. Set the thermostat(s) on the heater to the maximum (hottest) setting.

**Laars Heaters**

1. Turn power off to heater.
2. Remove factory jumper from terminal block.
3. Wire ECOMMAND 4 to the heater as shown.
4. Ensure toggle switch is in the ON position.
5. Set heater thermostats to maximum position.

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**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.

**Allow Low Speed**

This menu only appears if the filter is configured for 2-speed or variable 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.

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**Solar**

If the solar control logic is “Enabled”, several additional steps must be taken to ensure proper operation of the solar system. If the solar is operated by a valve, then the Valve3 output must be setup for solar logic (page 22). If the solar is operated by a pump, then one of the AUX relays must be set up for solar logic (page 20). 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. The desired temperature 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.
**Hayward Heaters**

Refer to the instructions in the heater manual for “2-wire Remote Thermostat” operation under “Remote Control Connections” and the diagram below:

1. Turn off power to heater.
2. Wire ECOMMAND 4 to terminals 1 & 2 (see diagram).
3. Leave jumper attached to terminals 4 & 5.
4. Move “BYPASS” dipswitch on heater circuit board to “ON” position (up).
5. Turn heater power back on.
6. Switch heater to either “Pool” or “Spa” (it doesn’t make any difference which is selected, the ECOMMAND 4 will take control).
7. Heater display should be “bO” (for “bypass On”).
8. Heater will fire whenever ECOMMAND 4 requests (when ECOMMAND 4 “Heater” LED is illuminated).

**Pentair/Purex/MiniMax**

1. Turn power off to heater.
2. Remove factory installed jumper from the “Ext Switch” connector.
3. Wire the ECOMMAND 4 to the “Ext Switch” connector as shown below.
4. The wires to the ECOMMAND 4 must be separated from any line voltage wires. Failure to follow these instructions may cause erratic operation of the heater.
5. Set the Power (Thermostat Select) switch to either “Pool” or “Spa”.
6. Set the “Pool” and “Spa” thermostats to their maximum settings.

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**Highest Speed**

This is the highest speed that the variable speed pump is allowed to run at. It is used as the upper limit in the High Speed Settings Menu. Also, this is the speed that the pump will run at during the first 3 minutes of operation anytime the pump has been off for more than 30 seconds. Set highest speed from 20% to 100% (default).

**Freeze Protection**

Freeze protection is used to protect the pool and plumbed equipment against freeze damage. If freeze protection is enabled and the AIR temperature sensor falls below the freeze threshold (see below), the ECOMMAND 4 will turn on the filter pump to circulate the water. If “Pool and Spa” is selected in the Pool/Spa sub-menu (see page 22), the valves will also 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 Speed**

This menu only appears if freeze protection is enabled and the pump is configured for 2-speed or variable speed pump operation. This is the speed that the pump will run at during freeze protection operation. Select high (default) or low speed operation.

**Freeze Protection Temperature**

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

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**Heater1 Config.**

- Push to access heater options
- Move to previous/next configuration menu
- Toggle between Enabled and Disabled (default) Heater 1
- Move to next menu item or previous/next configuration menu
- Toggle between Enabled and Disabled (default) Heater 1 Cooldown
- Move to next menu item
- Toggle between Enabled and Disabled (default) Heater 1 Extend
- Move to previous/next configuration menu
- Toggle between Enabled and Disabled (default)
- Move to next menu item or previous/next configuration menu

**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 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 valve, the proper temperature setting will be used.

**Heater Cooldown**

This feature ensures that the heater cools down before water circulation is stopped. When enabled, the ECOMMAND 4 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.

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**Hayward Heaters**

Refer to the instructions in the heater manual for “2-wire Remote Thermostat” operation under “Remote Control Connections” and the diagram below:

1. Turn off power to heater.
2. Wire ECOMMAND 4 to terminals 1 & 2 (see diagram).
3. Leave jumper attached to terminals 4 & 5.
4. Move “BYPASS” dipswitch on heater circuit board to “ON” position (up).
5. Turn heater power back on.
6. Switch heater to either “Pool” or “Spa” (it doesn’t make any difference which is selected, the ECOMMAND 4 will take control).
7. Heater display should be “bO” (for “bypass On”).
8. Heater will fire whenever ECOMMAND 4 requests (when ECOMMAND 4 “Heater” LED is illuminated).

**Pentair/Purex/MiniMax**

1. Turn power off to heater.
2. Remove factory installed jumper from the “Ext Switch” connector.
3. Wire the ECOMMAND 4 to the “Ext Switch” connector as shown below.
4. The wires to the ECOMMAND 4 must be separated from any line voltage wires. Failure to follow these instructions may cause erratic operation of the heater.
5. Set the Power (Thermostat Select) switch to either “Pool” or “Spa”.
6. Set the “Pool” and “Spa” thermostats to their maximum settings.

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**Heater1 Cooldown**

This feature ensures that the heater cools down before water circulation is stopped. When enabled, the ECOMMAND 4 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.
**Raypak RP2100 Pool/Spa Heater**

1. Turn power off to heater.
2. Push the mode button to “spa” mode.
3. Set the temperature to the maximum.
4. Push the mode button to “OFF”.
5. Lastly, plug the prewired connector in the P7 position on the board.

**IMPORTANT:** The heater will display “OFF” when it is being remotely controlled by the ECMAND 4. Some homeowners see the “OFF” display and, thinking this is a mistake, change the mode to “POOL” or “SPA” which then disables the remote control by the ECMAND 4. To prevent this: Remove the heater touch pad connector (P5) which will disable the touchpad.

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**STA-RITE Heater**

1. Turn power off to heater.
2. Remove upper jacket and open the control box.
3. Remove the jumper for the “fireman’s switch.”
4. Wire to the ECMAND 4 using wire rated for 105°C minimum.

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**Filter Off Valve Change**

This menu appears only if Pool/Spa setup is “Pool Only” or “Spa Only”. When enabled, Valve 1 (return) will follow the Aux1 output and Valve 2 (suction) will follow the Aux2 output.

**Filter Config**

+ Push to access pump options
- Move to previous/next configuration menu
+ Rotate between 1-speed (default), 2-speed and variable speed options
- Move to next menu item
+ Adjust the lowest speed desired for variable speed operation
- Move to next menu item
+ Adjust the highest speed desired for variable speed operation
- Move to next menu item
+ Toggle between Enabled (default) and Disabled Freeze Protection
- Move to next menu item or previous/next configuration menu
+ Adjust the desired freeze protection temperature (33°F - 42°F)
- Move to previous/next configuration menu

**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. Refer to the appropriate sections in the Installation manual for specific information regarding the control logic for 2-speed and variable speed pump operation.

For the Hayward Tristar variable speed pump: The Filter relay is used to supply input power to the VSC pump control. The relay will be on when the filter pump output is on. When the filter pump output is off, the relay will be off. On, off and speed is controlled by commands sent to the pump.

**Lowest Speed**

This is the lowest speed that the variable speed pump is allowed to run at. It is used as the lower limit in the Low Speed Settings Menu. Set lowest speed from 10% (default) to 50%.
Hayward Variable Speed Filter Pump: Refer to the diagram below for proper low voltage communication wiring between the ECOMMAND 4 and the Hayward Tristar Variable Speed Control (VSC).

Use four conductor cable (typically phone cable) for communications connection between the VSC and the ECOMMAND 4. The maximum wiring distance is 500 feet (160 meters). Note that the terminals on both the VSC interface board and the ECOMMAND 4 main board are numbered. The terminal connections should be matched between both terminal blocks (connect 1 to 1, 2 to 2, etc.). The communications cable should be routed through the knockout hole on the left side of the VSC enclosure, and a watertight fitting should be used to keep water and debris out of the opening. The communications cable should also be routed away from the ECOMMAND 4 and VSC power connections if possible.

**VSC Pump Address Setting**

The VSC address must be set to 001 when using the VSC with the ECOMMAND 4. Refer to the TriStar Pump Owner’s Manual (IS3220VSC) and Hayward document IS3220VSCAQLL for specific instructions on setting the pump address.

**Temperature Sensors**

The ECOMMAND 4 utilizes 10K ohm thermistor type sensors. Three sensors (water temperature, air temperature and solar temperature) are included. If the ECOMMAND 4 is being used to control a solar heating system, the solar sensor is required. The sensors are provided with a 15 ft. cable. If a longer cable is required, contact the Goldline service dept. for information on suitable cable types and splices. See page 6 and the diagram below for installation information.
4. Configuration Setup

After plumbing and wiring are complete, the ECOMMAND 4 MUST BE CONFIGURED before attempting to operate. Configuration information is entered at the keypad and "tells" the ECOMMAND 4 what equipment is connected and how each should be controlled.

Accessing the Configuration Menus

Configuring the ECOMMAND 4 requires that you navigate through the Configuration Menu and input various information. For more detailed information about using the ECOMMAND 4 menu system, refer to the Operation Manual.

To access the Configuration Menu

- Press repeatedly until “Configuration Menu” is displayed
- Move to configuration menu items
- Press BOTH buttons SIMULTANEOUSLY for 5 seconds to unlock

NOTE: The configuration menu automatically “locks” after 2 minutes of no buttons being pressed to prevent unauthorized people from changing the control logic inadvertently and possibly damaging the pool equipment or causing a “call back” to fix the configuration.

Configuration Menu Items

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

- Chlor. Config. + to view/change
- Ext. Chlorinator Enabled
- Display Salt

Chlorinator

If the optional external chlorinator is enabled (requires the use of a Goldline Aqua Rite or Hayward Swimpure chlorinator), the ECOMMAND 4 will automatically chlorinate both the pool and spa according to the desired output setting (see Settings Menu in the Operation manual). If disabled, all displays relating to the chlorinator will be suppressed.

Display

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