1011728 RevB

HAYWARD®

AquaRite® S3 Series

Pool Chlorinator and Automation Control

Owner's Manual



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AQRS340
AQRS325
AQRS315

Hayward Industries
1415 Vantage Park Dr., Suite 400
Charlotte, NC 28203
Phone: (908) 355-7995
www.hayward.com

IMPORTANT SAFETY INSTRUCTIONS

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

READ AND FOLLOW ALL INSTRUCTIONS

- Use Copper Conductors Only
- Disconnect all AC power during installation.
- ⚠ **WARNING:** To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
- Hayward salt systems are designed, tested and sold as systems and are certified by several agencies around the globe --- with each component of the systems meeting all required certifications and attendant legal requirements. The use of an untested, uncertified parts with Genuine Hayward salt chlorination products could lead to premature product failure.
- Pursuant to the terms and conditions of any applicable Warranty, the use of a non-genuine Hayward replacement salt chlorination cell on any Hayward automation or chlorination product will void any Warranty.
- A green colored terminal 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.
- 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.
- NOTICE TO USERS: This control product is to be used only in accordance with the directions of this label. It is an offense under the Pest Control Products Act to use a control product under unsafe conditions.

⚠WARNING

- **INGESTION HAZARD:** This product contains a button cell or coin battery.
- **DEATH** or serious injury can occur if ingested.
- A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours.**
- **KEEP** new and used batteries **OUT OF REACH or CHILDREN.**
- **Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body.



- ⚠ **WARNING:** Even used batteries may cause death or serious injury.
- ⚠ **WARNING:** Call a local poison control center for treatment information.
- ⚠ **WARNING:** Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.

- ⚠ **WARNING:** This product contains non-rechargeable batteries. Do NOT force discharge, recharge, disassemble, heat above 85°C, or incinerate. Doing so may result in injury due to venting, leakage, or explosion resulting in chemical burns.

- ⚠ **WARNING:** This product contains non-replaceable batteries. Do NOT under any circumstances attempt to remove or replace the factory-installed battery.

- ⚠ **WARNING:** Non-rechargeable batteries are not to be recharged.

NOTICE: This product contains a Panasonic BR1225 coin-type lithium battery.

NOTICE: The nominal voltage of the battery contained within this product is 3V.

Certificate of Conformity Product:	AQRS3 & AQRS3 Omni Series
CPSC Regulation:	Safety Standard for Button Cell or Coin Batteries and Consumer Products Containing Such Batteries Underwriters Laboratories UL 4200A-2023
Manufacturer:	Hayward Industries 1415 Vantage Park Drive, Suite 400, Charlotte, NC 28203 Technical Service Phone: (908) 355-7995
Manufacture Location:	Hayward Industries, 61 Whitecap Drive, N. Kingstown, RI 02852
Date Manufactured:	The serial number consists of 14 characters Example serial number: 1A23045-1045631 The 3rd - 4th digits are the year The 5th - 7th digits are the # day of year Example above is the 45th day of 2023
Test Report By:	Hayward Industries One Hayward Industrial Drive, Clemmons, NC 27012 Phone: (908) 355-7995 Test Report: March 2024

I hereby certify that the finished product(s) covered by this certificate comply with the rules, bans, standards, and regulations stated herein, and that the information in this certificate is true and accurate to the best of my knowledge, information, and belief. I understand and acknowledge that it is a United States federal crime to knowingly and willfully make any materially false, fictitious, or fraudulent statement, representation, or omission on this certificate.

Works only with a genuine S3 Series Hayward salt cell

Certified to NSF/ANSI Standard 50

Omni not evaluated by NSF

SAVE THESE INSTRUCTIONS

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by Hayward could void the user's authority to operate this equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio / TV technician for help.

Industry Canada Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
The term "IC" before the certification / registration number only signifies that the Industry Canada technical specifications were met.

Before you Begin

The AquaRite® S3 is an automatic chlorine generation system with control functions for pool or spa sanitization. Chlorine generation requires a concentration of salt (sodium chloride) in the pool water. The unique design of the AquaRite S3 allows for a broad range of salt concentration ensuring efficient chlorine production regardless of salt level. The AquaRite S3 automatically sanitizes your pool by converting the salt into free chlorine which kills bacteria and algae in the pool. 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. The only time you may need to add more salt to the pool is when water is replenished due to backwashing, draining, or splashing (not evaporation).

The AquaRite S3 also provides control functions adding convenience to pool and spa management. Built in functions include variable speed filter pump control, single speed filter pump control (requires Smart Relay), heater control, pool cover detection, and more.

The AquaRite S3 is offered in three models with the AQRS340 designed to handle the purification needs of most residential swimming pools up to 40,000 gallons (150,000 liters), or 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.

Use the proper AquaRite S3 model for your pool (installation and mounting requirements are the same for all models):
AQRS340 - for pools up to 40,000 gallons
AQRS325 - for pools up to 25,000 gallons
AQRS315 - for pools up to 15,000 gallons

What's Included

Before attempting to install the AquaRite S3 system, check that the following components have been included in the package:

- AquaRite S3 Electronics Unit
- Flow Switch
- Electrolytic Cell

What's NOT Included

Some of the additional items that you may need to complete an installation include:

- Wire/conduit for 115 VAC or 230 VAC connection from the main panel to AquaRite S3
- Wire/conduit for filter pump
- Wire for remote heater control
- Hayward Smart Relay - required for single speed filter pump control
- Temperature sensors (water sensor necessary for heater control, air sensor needed for recirculation freeze control)
- Mounting hardware (screws, bolts, etc.) for mounting AquaRite S3
- Tools and PVC glue for installing the TurboCell and flow switch

NOTE: Hayward does not recommend using the AquaRite S3 to generate bromine.

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 an electronic chlorine generator in your particular location and circumstances.

NOTE: The use of dry acid (sodium bisulfate) to adjust pool pH is discouraged especially in arid regions where pool water is subject to excessive evaporation and is not commonly diluted with fresh water. Dry acid can cause a buildup of by-products that can damage your chlorinator cell.

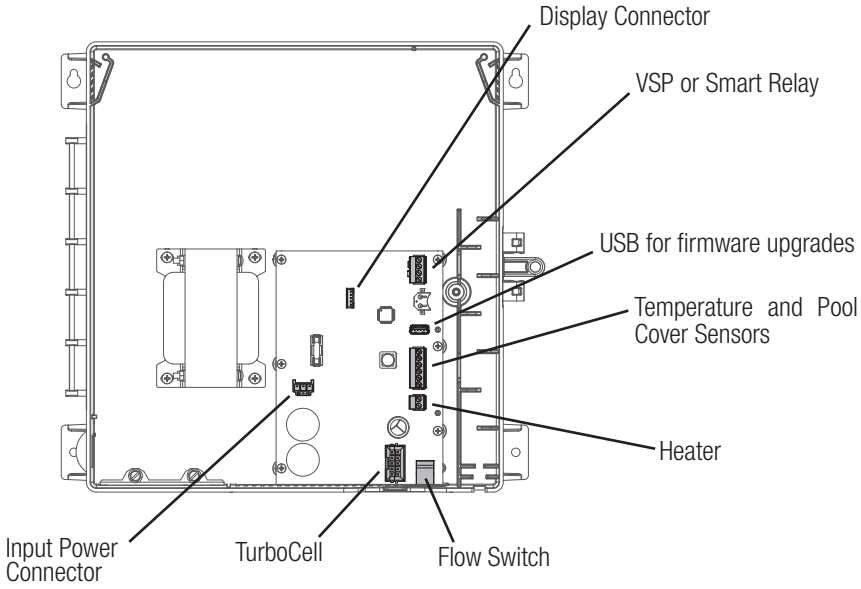
The functions and features described in this manual assume that the AquaRite S3 is using the latest firmware version available from Hayward. For the AquaRite S3, a USB port is used for firmware upgrades. The latest firmware can be found on the AquaRite S3's product page on the Hayward website. For instructions on how to upgrade firmware, refer to page 22.

Although the AquaRite S3 is easy to use, it is important to completely read through this manual before attempting to install, configure and operate the unit.

Features

The AquaRite S3 offers the following features:

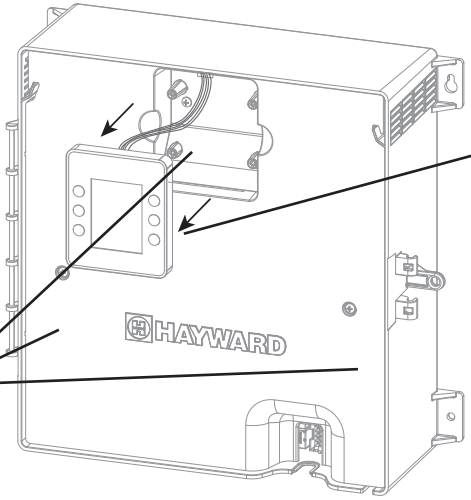
- can generate chlorine using a broad range of salt concentrations from 1200 PPM to 8000 PPM
- can control and schedule a Hayward Variable Speed (VSP) pump using the internal RS-485 connection, a Pentair VSP using a Hayward HLPMPCONV converter (sold separately) or a single speed pump using a Hayward Smart Relay (sold separately)
- can control a gas heater, heat pump or any other heater that uses a low voltage on/off remote connection (requires Hayward water temperature sensor sold separately)
- inputs for water and air temperature sensors (temperature sensors sold separately)
- connection for flow switch used to detect water flow
- connection for pool cover detection (lowers chlorine production when the pool is covered)
- can be powered by either 115 or 230 VAC
- offers recirculation freeze control which turns on the filter pump automatically to prevent freezing (requires Hayward air temperature sensor sold separately)



USE ONLY HAYWARD GENUINE REPLACEMENT PARTS

Front Panel Removal

DANGER of Death, Injury or Property Damage if procedure not followed. Dead front removal is required for this installation. Power to the AquaRite S3 panel MUST be shut off before the dead front is removed. This means a complete shutdown of power to the entire AquaRite S3 panel.



Pull the display away from the panel by grasping it with your hand (no tools required). Then, remove the 3 screws and pull the plastic panel away from the enclosure. It is not necessary to disconnect the display wiring.

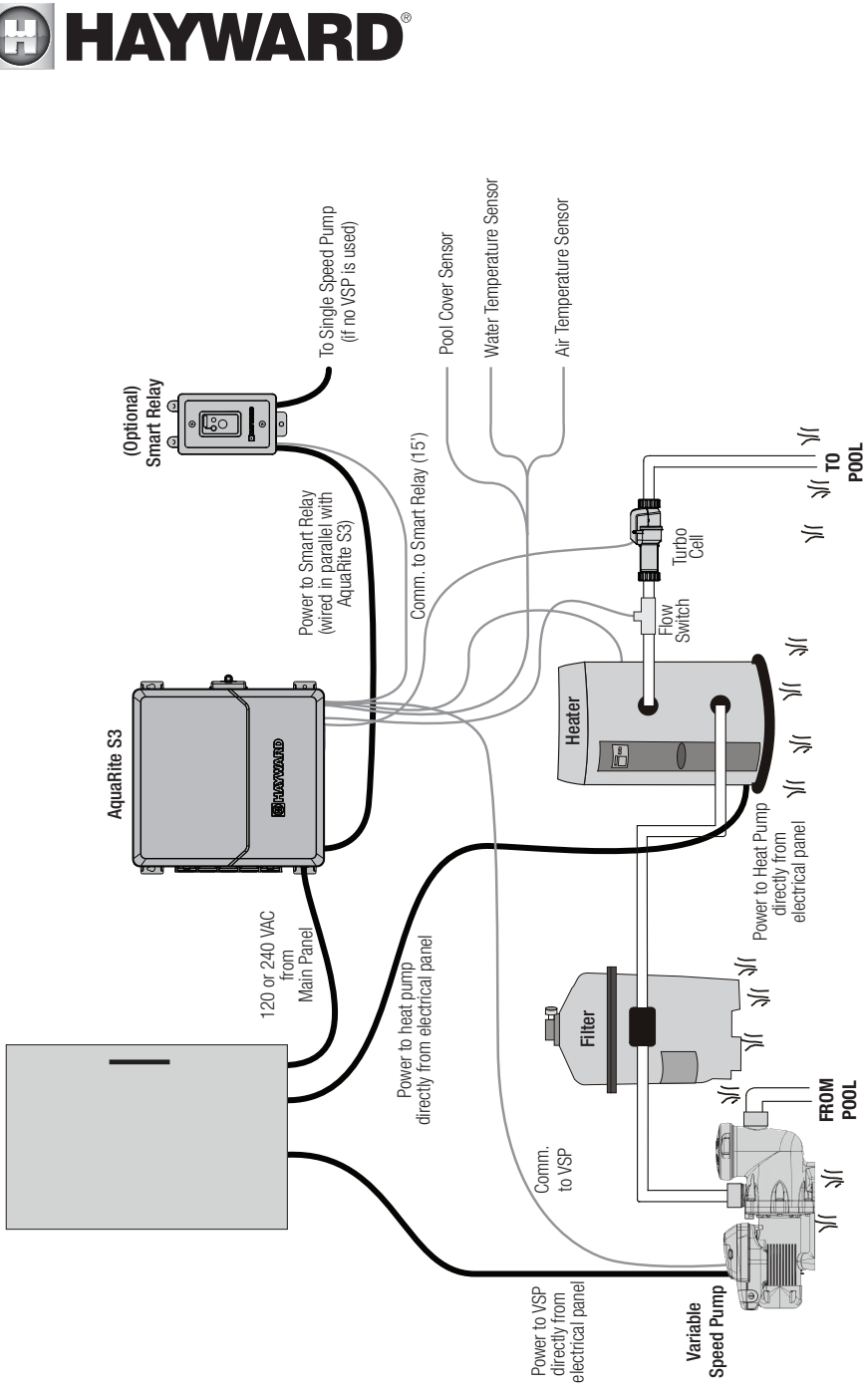
Remove three screws

Installation Steps

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

1. Mounting the equipment (page 8)
   - AquaRite S3 main unit
   - Optional Temperature sensors
2. Plumbing (page 9)
   - TurboCell
   - Flow Switch
3. Electrical Wiring (page 10)
   - High Voltage
   - Low voltage wiring (Smart Relay, VSP, heater, sensors, heater, flow switch and TurboCell)
4. Prepare the pool water (page 18)
   - General Water Chemistry
   - Salt
5. System Startup (page 20)
   - Configuration
   - Operation

USE ONLY HAYWARD GENUINE REPLACEMENT PARTS


(Optional)
Smart Relay
To Single Speed Pump
(if no VSP is used)
Pool Cover Sensor
Water Temperature Sensor
Air Temperature Sensor
Power to Smart Relay
(wired in parallel with
AquaRite S3)
Comm. to Smart Relay (15')
AquaRite S3
TO
POOL
Turbo
Cell
Flow
Switch
Heater
120 or 240 VAC
from
Main Panel
Power to heat pump
directly from electrical panel
Power to Heat Pump
directly from
electrical panel
Filter
FROM
POOL
Comm.
to VSP
Power to VSP
directly from
electrical panel
Variable
Speed Pump

Mounting the Equipment

AquaRite S3 Enclosure

The AquaRite S3 is contained in a raintight enclosure that is suitable for outdoor mounting. The control must be mounted a minimum of 6 ft. (2 meters) horizontal distance from the pool/spa (or more, if local codes require). The AquaRite S3 is designed to mount vertically on a flat surface with the knockouts facing downward. Because the enclosure is vented (disperses heat from inside the box), it is important not to block the four sides of the control. Do not mount the AquaRite S3 inside a panel or tightly enclosed area. Plugs are supplied to seal any unused knockouts.

When selecting a mounting location, note that the standard cables supplied with the included flow switch and TurboCell, as well as optional accessories like Hayward temperature sensors, are all 15 ft. (5m) long. Try to mount the AquaRite S3 at a height/location where the screen and keypad can be easily used. Select the proper mounting hardware given the size and weight of the unit. The AquaRite S3 mounting brackets require a total of 4 mounting screws/bolts to fasten the AquaRite S3 to the mounting surface.

Temperature Sensors (sold separately)

If using the heater function or the recirculation freeze protection function, the AquaRite S3 will require the use of Hayward temperature sensors. Refer to the following information for mounting instructions.

Water Sensor (required for heater control)

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.

Air Sensor (required for recirc freeze protection)

Mount the air sensor outdoors to a surface with low thermal conductivity. IMPORTANT: The air sensor must not be mounted in direct sunlight.

Plumbing

Ensure that the AquaRite S3 installation does not constitute a cross connection with the local potable water supply. Consult local plumbing codes.

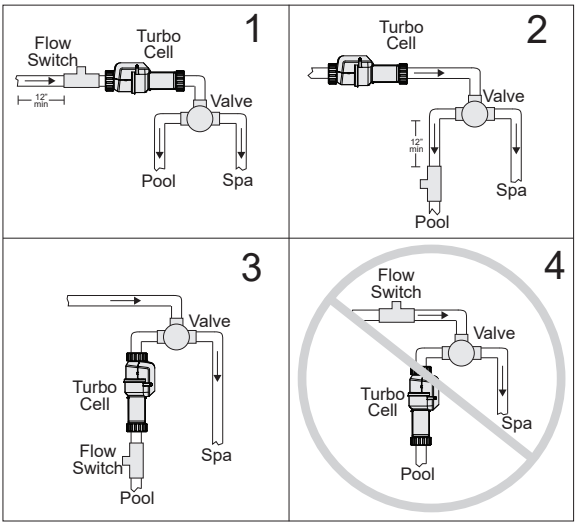
The AquaRite S3 is packaged with a TurboCell, flow switch and cell unions.

The flow switch and cell should be plumbed in the return line to the pool/spa. The preferred installation is after (downstream) all the pool equipment (filter, heater, solar, etc.). The electrolytic cell and flow switch tee fitting are designed to be plumbed into 2" (51mm) PVC pipe. Adapters (not included) can be used for systems with 1½" (38 mm) plumbing.

For proper plumbing, refer to the overview diagram on page 7. Alternate configuration #1 shows the flow switch can also be in front of the cell. Configurations #2 and #3 allow for chlorination of both the pool and spa during spa spillover operation, but prevent overchlorination of the spa during "spa only" operation. Never use configuration #4.

Flow Switch: IMPORTANT: There must be at least a 12" (25cm) straight pipe run before (upstream) the flow switch. If the switch is plumbed after the cell, the cell can by counted as the 12" (25cm) of straight pipe. To ensure proper operation, verify that the arrow on the flow switch (located on top of gray hex) points in the direction of water flow.

Electrolytic Cell: Install using the unions provided. Tighten unions BY HAND for a watertight seal. For pool/spa combination systems with spillover, use configurations #2 or #3 above to allow chlorination of both the pool and spa during spillover but preventing overchlorination when operating the spa only.

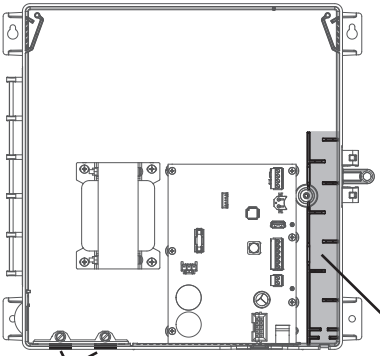


Electrical

The AquaRite S3 requires both high and low voltage connections. A high voltage connection will be made to the AquaRite S3 to power the unit. Low voltage connections will be made to sensors, VSP wiring, optional Smart Relay, heater wiring and more. Enclosure knockouts are provided for high voltage wiring. A low voltage channel inside the enclosure will ensure a separation of wiring and organize the low voltage wiring coming into the AquaRite S3 enclosure. Refer to the diagram below for the location of knockouts and internal wiring paths. Always:

- Ensure that power is disconnected prior to performing any wiring
- Follow all local and NEC (CEC if applicable) codes
- Use copper conductors only
- Always remove power to the AquaRite S3 before removing the front panel

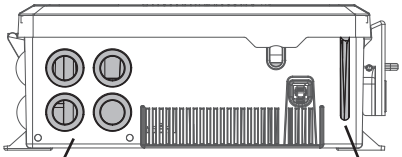
Inside View



High Voltage knockouts

Low Voltage Wiring Channel

Bottom View



High Voltage knockouts

Low Voltage Wiring Channel

High Voltage Wiring

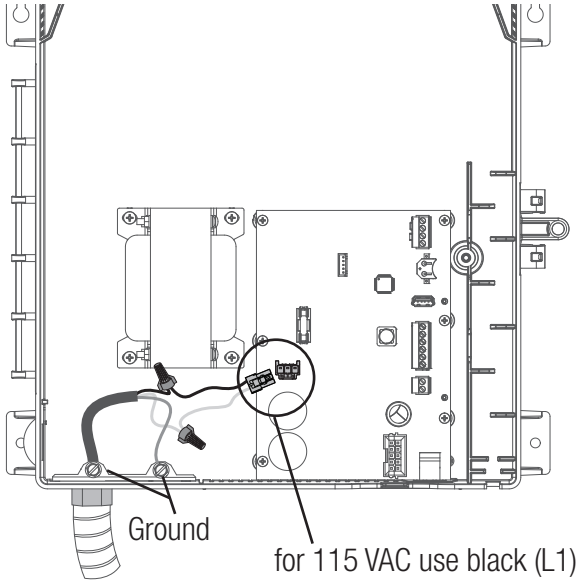
Input Power

If the AquaRite S3 will be controlling a VSP or single speed pump using a Smart Relay, it must be powered continuously. A schedule will be created for the pump and the AquaRite S3 will generate chlorine only when the pump is running. If the AquaRite S3 will not be controlling the filter pump, it should be wired to the load side of the pump timer or in parallel with the filter pump. This will ensure that the AquaRite S3 will power up with the pump and only generate chlorine when the pump is running. If not wired in that manner, the flow switch will enable/disable the chlorinator function.

Power Connection

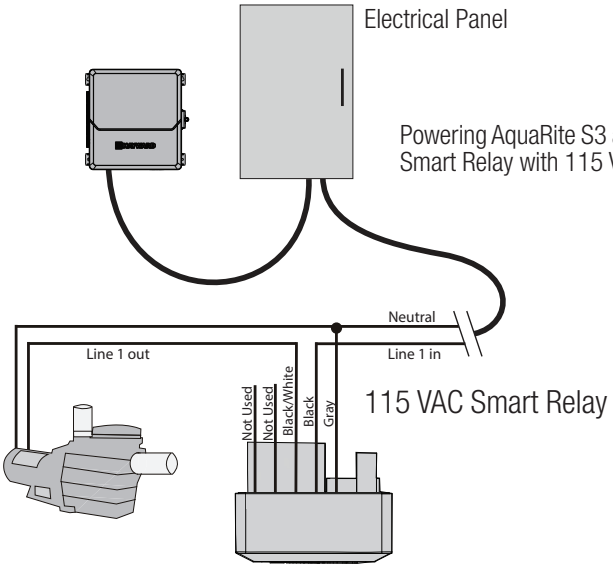
The AquaRite S3 can be powered by 115 VAC (2A) or 230 (1A) VAC. There is no need to manually select or use different input terminals, the AquaRite S3 will automatically detect the input voltage. A wiring harness is included and will plug into the input power connector shown below. Wire nuts are supplied for connecting the harness to input power. Wire the harness according to the diagram below. Connect the ground wire to one of the green ground screws as shown.

For Canadian installations, the AquaRite S3 shall be connected to a circuit protected by a class A ground fault interrupter.



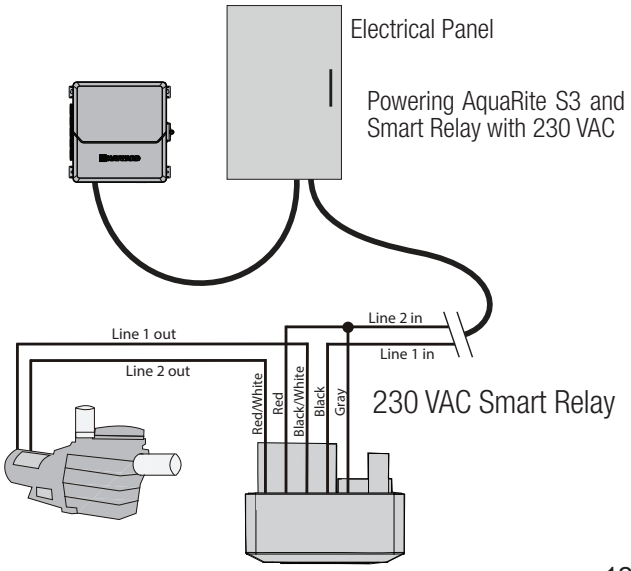
If the AquaRite S3 is controlling a single speed filter pump using a Smart Relay
Use this wiring method when the AquaRite S3 is controlling a single speed filter pump with a Smart Relay. The Smart Relay and the AquaRite S3 are continuously powered as shown. The AquaRite S3 will control the Smart Relay's function using the low voltage communication wiring. The diagrams below show wiring for 115 VAC and 230 VAC.

115 VAC
Single Speed Pump



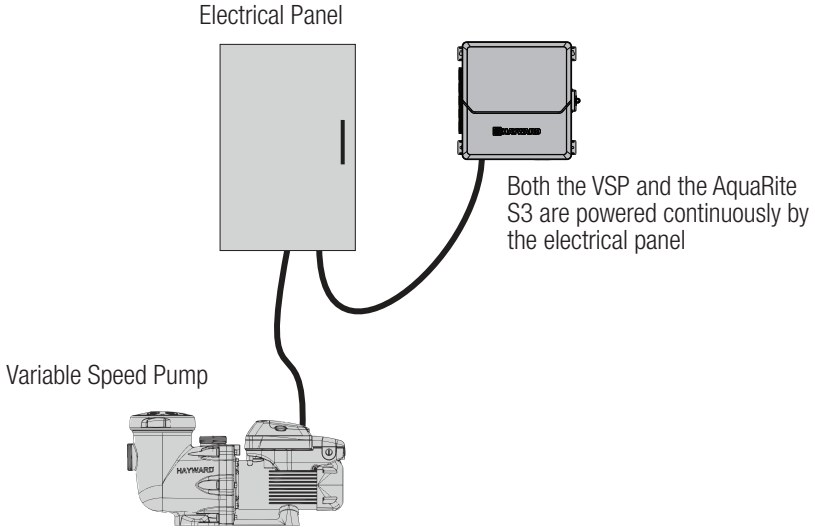
OR

230 VAC
Single Speed Pump



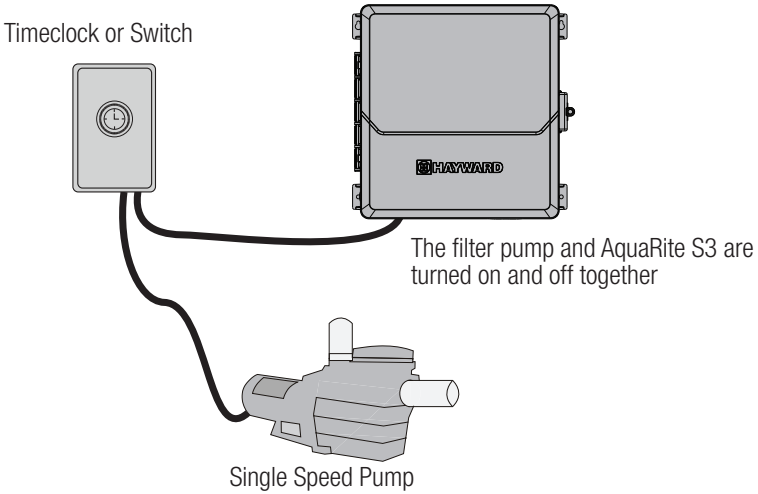
If the AquaRite S3 is controlling a VSP

Use this wiring method when the AquaRite S3 is controlling a Hayward VSP. For Pentair VSPs, a Hayward HLPMPCONV converter (sold separately) must be used. The pump and the AquaRite S3 are continuously powered as shown. The AquaRite S3 will control the pump's function using the low voltage communication wiring.



If the AquaRite S3 is NOT controlling the filter pump

Use this wiring method when the AquaRite S3 is not controlling the pump. Power from the filter pump timer or source will power the pump and AquaRite S3 at the same time.



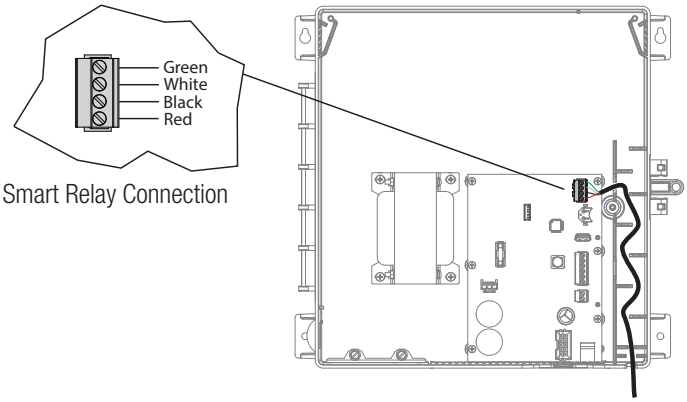
Low Voltage Wiring

NOTE: There is a low voltage channel on the right side of the AquaRite S3 enclosure shown on page 10. All low voltage wiring that enters/exits the enclosure must run through this channel. There is a foam gasket included with the AquaRite S3 that should be used to seal the channels's exit after wiring is complete. Do not run low voltage wiring through a knockout or with any high voltage wiring.

Smart Relay Wiring

Smart Relays rely on communication from the AquaRite S3. A Smart Relay comes with a 15ft 4 conductor cable and is wired to the RS-485 connector. Wire the cable as shown in the diagram. After connecting the wires to the connector, run the communication cable through the low voltage Wiring Channel as shown.

To ease wiring, the connector can be lifted off the onboard pins. Connect the Smart Relay communication wires to their proper screw terminals, then push the connector back onto the pins. For best results, strip back leads 1/8" before inserting into the screw terminals.



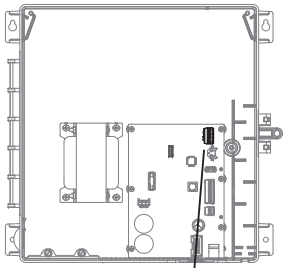
Smart Relay Connection

Hayward Variable Speed Pump (VSP) Wiring

The Hayward TriStar 950, TriStar 900, Super Pump 700 and MaxFlo 500 pumps wire directly to the RS-485 connector and will be fully controlled by the AquaRite S3 (schedules and speeds). Refer to the VSP Communication Wiring table and diagrams on the following page for VSP communication wiring instructions. For Pentair VSP models, use a Hayward HLPMPCONV converter (sold separately). Refer to the HLPMPCONV instructions for wiring information. After wiring, run the communication cable through the low voltage Wiring Channel (same as Smart Relay above).

To ease wiring, the connector can be lifted off the onboard pins. Connect the VSP communication wires to their proper screw terminals, then push the connector back onto the pins. For best results, strip back leads 1/8" before inserting into the screw terminals.

HAYWARD®



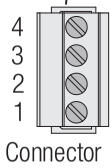
VSP Communication Wiring Table

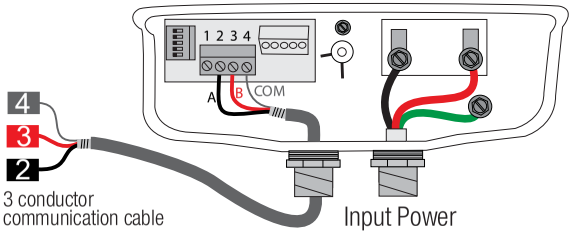
Pump Model	S3 Conn.	Pump Conn.
TriStar VS 950 (before Jan 2019)	2	7
	3	8
	4	1
*TriStar VS 950 (after Jan 2019)	2	A or 2
*TriStar VS 900	3	B or 3
*Super Pump VS 700	4	COM or 4
*MaxFlo VS 500		

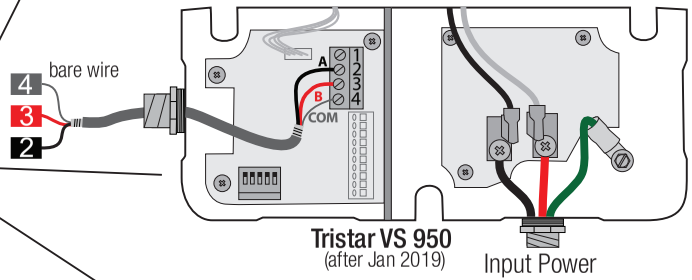
* Disconnect onboard display and set all dip switches to OFF position.

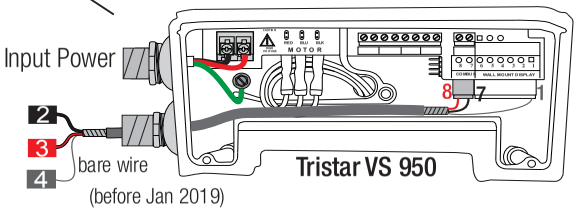


For pump models with dip switches, set all switches to OFF position (as shown). Remove the display cable. Use the spare connector taped to the display cable for the communication cable connection.



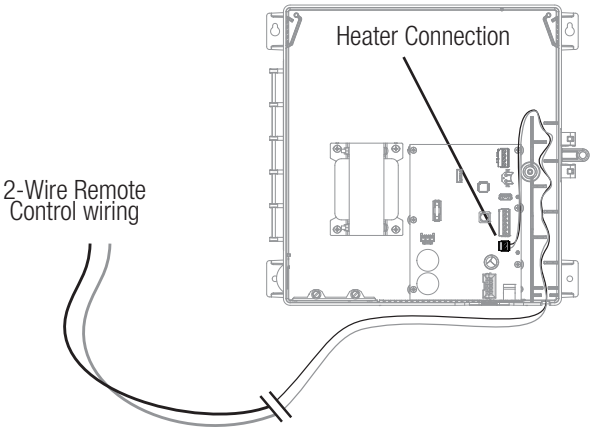






Heater Control

The AquaRite S3 provides a set of low voltage dry contacts that can be connected to most gas heaters or heat pumps with 24V control circuits. Manuals supplied with most heaters include specific wiring instructions for connecting the heater to an external control (usually identified as “2-wire” remote control). For millivolt or line voltage heaters, contact Hayward Technical support.



1. Wire heater to 120/240V power source per the instructions in the heater manual. The AquaRite S3 does NOT control the power going to the heater.
2. Wire the AquaRite S3 heater output (shown above) to the heater’s remote control connection (refer to heater manufacturer’s manual). 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. Refer to the heater manual but it’s very likely that the heater’s ON/OFF switch must be set to ON and the thermostat set to the maximum (hottest) setting.

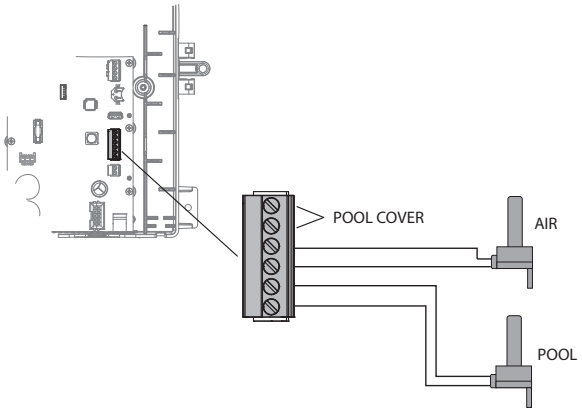
Sensors

Temperature Sensors

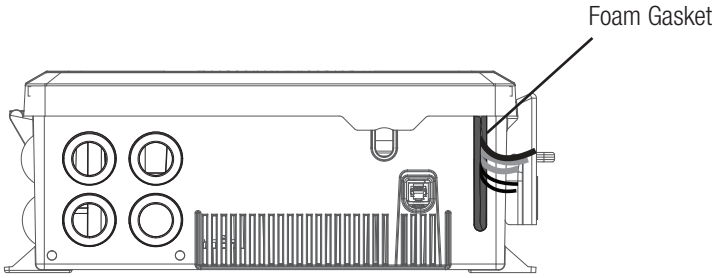
The AquaRite S3 utilizes Hayward 10K ohm thermistor type sensors for measurement of pool and air temperature. The sensors come with a 15 ft cable. If a longer cable is required, contact the Hayward Technical support for information on suitable cable types and splices.

Temperature sensors are wired to the 6 position connector shown on page 5 and below. To ease wiring, the connector can be lifted off the onboard pins. Connect the temperature sensors to their proper screw terminals, then push the connector back onto the pins. For best results, strip back leads 1/8” before inserting into the screw terminals.

Pool Cover Sensor
If the pool has a motorized cover, the AquaRite S3 can automatically scale back operational limits (both chlorination setpoint and pump speed) to ensure overchlorination doesn't occur. The pool cover sensor must use a normally open switch that connects to the pool cover terminals shown below. Refer to the pool cover manufacturer's literature to determine compatibility.



Final Steps
With the previous wiring completed, locate the precut removable foam gasket that can be used to seal the low voltage exit. Wrap it around the low voltage wiring at the exit of the enclosure (shown below). Work the gasket into the exit slot until it is fully sealed then re-install the panel and display.



Flow Switch
The flow switch cable plugs into the flow switch connector on the bottom of the AquaRite S3's enclosure shown on page 5. Ensure that the connector latch "snaps" into place.

TurboCell
The TurboCell should be plugged in AFTER the AquaRite S3 cover panel is installed. Refer to page 5 for the location of the chlorinator cell connector.