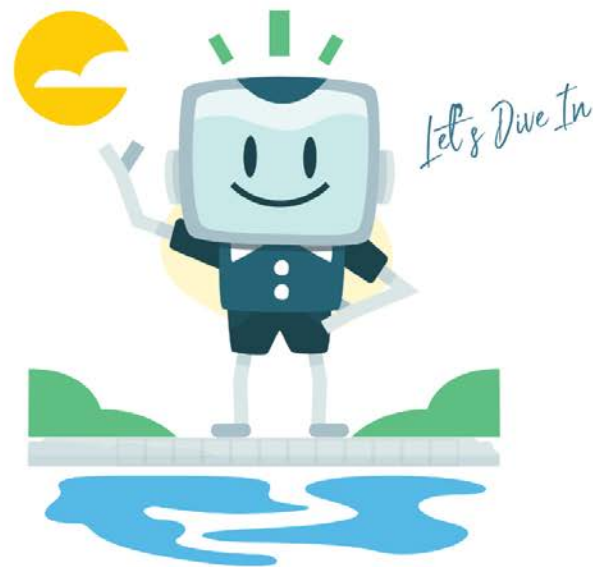


INSTRUCTION MANUAL

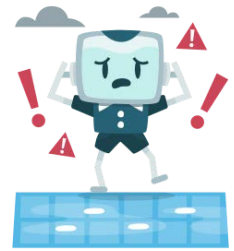


THE ATTENDANT



POOLSIDE *Tech*
267.810.0600
support@poolside.tech
poolside.tech

IMPORTANT SAFETY INSTRUCTIONS



When installing, using or servicing this electrical equipment, basic safety precautions should be taken, including the following:

- **READ AND FOLLOW ALL INSTRUCTIONS**
- **WARNING - To reduce the risk of injury**, do not permit children to use this product unless they are closely supervised at all times.
- A wire connector is provided on this unit to connect a **minimum 6 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 1.5 meters (5 feet) of the unit.
- **WARNING - Risk of Accidental Drowning.** Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use a spa or hot tub unless they are closely supervised at all times.
- **DANGER - To reduce the risk of drowning** from hair and body entrapment, install a suction fitting(s) with a marked flow rate that equals or exceeds the flow rate marked on the equipment assembly.
- **DANGER - To reduce the risk of injury**, do not remove the suction fittings. Never operate a spa or hot tub if the suction fittings are broken or missing. Never replace a suction fitting

with one rated less than the flow rate marked on the equipment assembly.

- **DANGER - Risk of Electric Shock.** Do not permit any electrical appliance, such as a light, telephone, radio, or television, within 5 feet (1.5 m) of a spa or hot tub.

- **DANGER - Risk of Electric Shock.** Install The Attendant at least 6 feet (2 m) from inside wall of hot tub or spa using nonmetallic plumbing

- **WARNING - To reduce the risk of injury:** Never install The Attendant in a location accessible to the public

- **WARNING - To reduce the risk of injury:**
 - The spa temperature should never exceed 40°C (104°F). Water temperatures between 38°C (100°F) and 40°C are considered safe for a healthy adult. Lower temperatures are recommended for young children and when spa use exceeds 10 minutes.

 - Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit spa water temperatures to 38°C (100°F).

 - Before entering a spa or hot tub, the user should measure the water temperature since the tolerance of water temperature-regulating devices can vary.

 - The use of alcohol, drugs, or medication before or during spa or hot tub use may lead to unconsciousness with the possibility of drowning.

- Obese persons and persons with a history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a spa.
- Persons using medication should consult a physician before using a spa or hot tub since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.
- People with infectious or communicable diseases should not use a spa, hot tub or pool.
- Prolonged immersion in a spa or hot tub may be injurious to your health.

SAVE THESE INSTRUCTIONS

CAUTION: THE EQUIPMENT AND CONTROLS SHALL BE LOCATED NOT LESS THAN 2 METERS (6 FEET) HORIZONTALLY FROM THE SPA OR HOT TUB

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Before You Begin



Congratulations on your purchase of The Attendant powered by Poolside Tech! The Attendant is designed to improve all aspects of the pool ownership experience. Our cloud based automation system is continually monitoring your equipment, water quality and temperature to determine the most energy efficient way to have your poolside oasis ready when you are.

Take a moment to review our Quick Start guide online at our knowledgebase @ [poolside.support!](https://poolside.support)



Tools/Equipment You Will Need

- Philips screwdrivers #1 and #2
- Slotted screwdriver 2mm or 5/64"
- Slotted screwdriver 3.5mm or 9/64"
- Wire cutters
- Wire strippers
- A drill and drill bits - for mounting on the side of a building you may need to use a masonry drill bit and a hammer drill to create the holes for mounting.
- Drywall or cement anchors depending on the selected installation location.
- The appropriate hardware - screws and anchors - to mount The Attendant enclosure
- Enclosure fittings

What's In The Box

- The Attendant controller
- High voltage relays (Quantity 2, expandable to 8)

Hardware Features

The Attendant offers the following features:

- Control of up to 2 high-power devices (expandable to 8). This includes single or multi-speed pumps, pool lights, landscape lighting, powered water features and more.
- Control of up to 5 automatic 24 VAC valve actuators. These actuators can control pool and spa water flow, water features, cleaners and more.
- Control of up to 5 temperature control devices or low voltage dry contact devices. This includes heaters, electric heat pumps, solar heaters, chillers and more.
- 5 temperature sensor inputs, or non-contact water level sensors.
- 5 contact switch inputs for use with flow switches, pool covers, float-style level sensors, and the like.
- Communication inputs for variable speed pump control, digitally controlled lights (DMX), salt cells, and heaters.
- Optional: Chemistry sensor modules supporting 2 pH and 2 ORP probes.
- Ethernet and Wi-Fi connectivity capability to homeowners network.

Devices Supported by The Attendant

The team at Poolside are constantly testing and validating new equipment for compatibility with The Attendant. Please see our website for an up to date list:

<https://poolside.tech/compatible-equipment>

Electrical Ratings

Model / Series	Input Voltage	Input Frequency	Input Wattage, Max.	Output(s)	Max Load Rating per Output
The Attendant (ATD-100)	120 / 240 VAC	60 Hz	112 W	High Voltage Relays (Relay 1-8)	120/240V, 20 A tungsten; 277 V, 20 A ballast; 120 V, 1.5 HP; 277 V, 3 HP Chemical Dosing pumps - limited to 5A/240VAC
				Low Voltage Relays (Valve 1-5)	24 V, Max. 1.5 A (combined total load)
				Low Voltage Serial Ports (Bus 1-4)	14 V, Max 1.5 A (combined total load)

Maximum Elevated Ambient Temperature Rating: 55 °C (131 °F)

All high voltage relays in The Attendant pool controller are double pole and rated at 3THP/30A for 240V and 1.5THP/30A for 120V equipment.

Certifications



This product has been certified by IAPMO R&T against NSF/ANSI 50

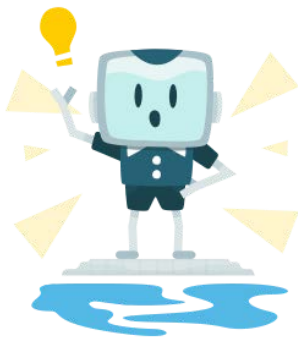
Installation Instructions

Installing the Equipment

The Attendant Controller

The Attendant enclosure is a raintight IP65 rated box designed for outdoor mounting and is also suitable for indoor mounting if desired. The box must be mounted **at least 2 meters (6 feet) away horizontally from the pool or spa**. (Always refer to your local regulations for the exact distance required to meet the codes for your installation.) The Attendant is designed to be mounted **vertically** with the enclosure door opening from the right side to the left.

It is imperative that you **read and follow these instructions** as well as **adhere to all governing electrical, plumbing, and construction codes** during the installation and operation of this system.

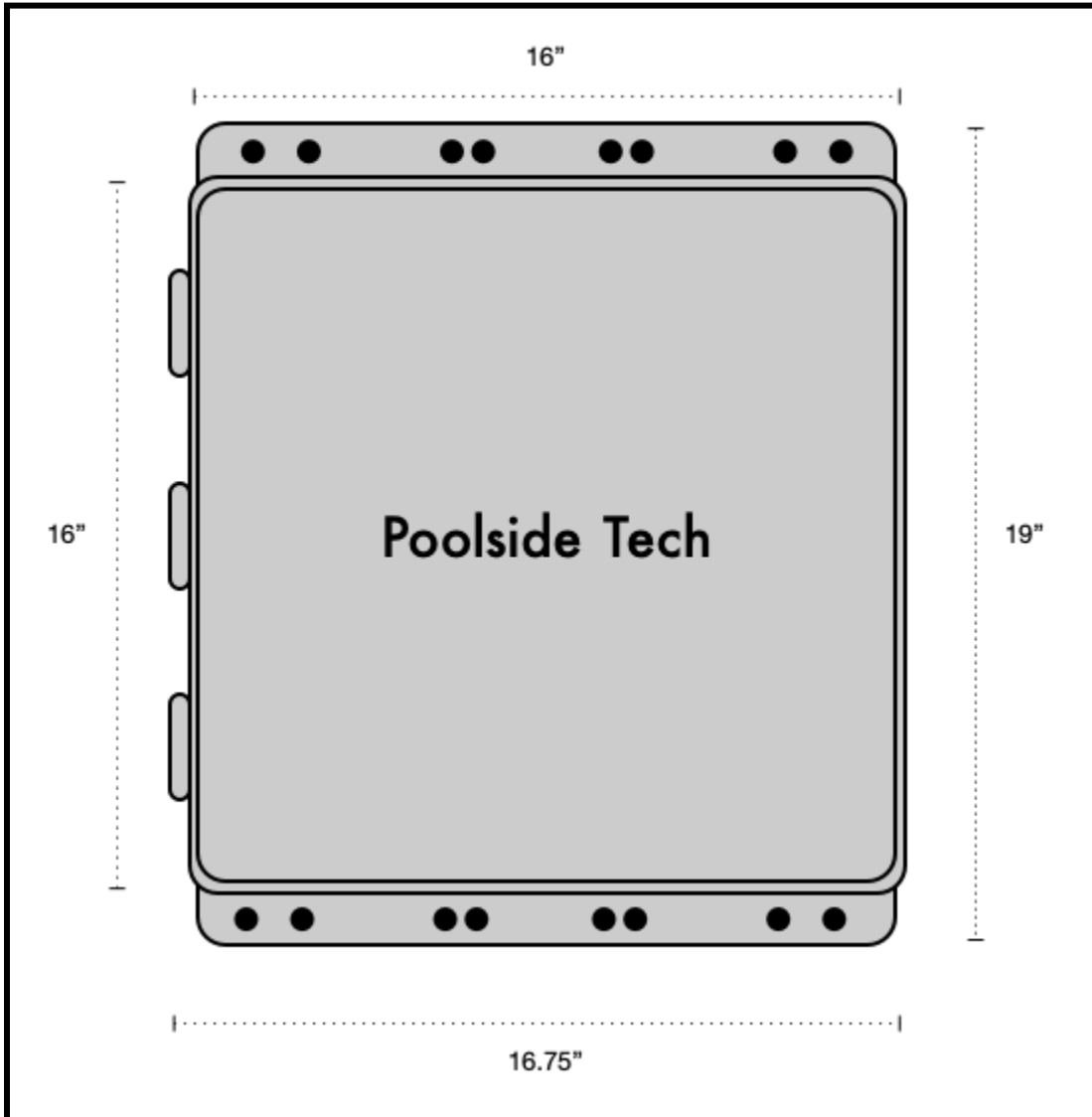


Tips for Choosing a Mounting Location

- Ensure you leave enough space for the wiring ports to run wires into them safely with room to work on them.
- Ensure you mount The Attendant in an area with enough space for the enclosure door to swing open free of any obstructions.
- Take care that the wires for all the devices you will be attaching are long enough to reach the box if they are already installed.
- Mount The Attendant at a height that allows the homeowner and/or service technician to access the touch screen easily.

Dimensions

The Attendant controller is 16" tall, 16" wide, and 5" deep. The adjustable installation mounts will add an additional 1.5" to the top and bottom (or each side) of the controller depending on how it is configured. The door hinges stick out about $\frac{3}{4}$ " on the left hand side of the front of the controller making it $16\frac{3}{4}$ " wide at the front. When installing the controller, please ensure you leave enough space to open the door fully.



Wiring Locations and Conduit Sizing

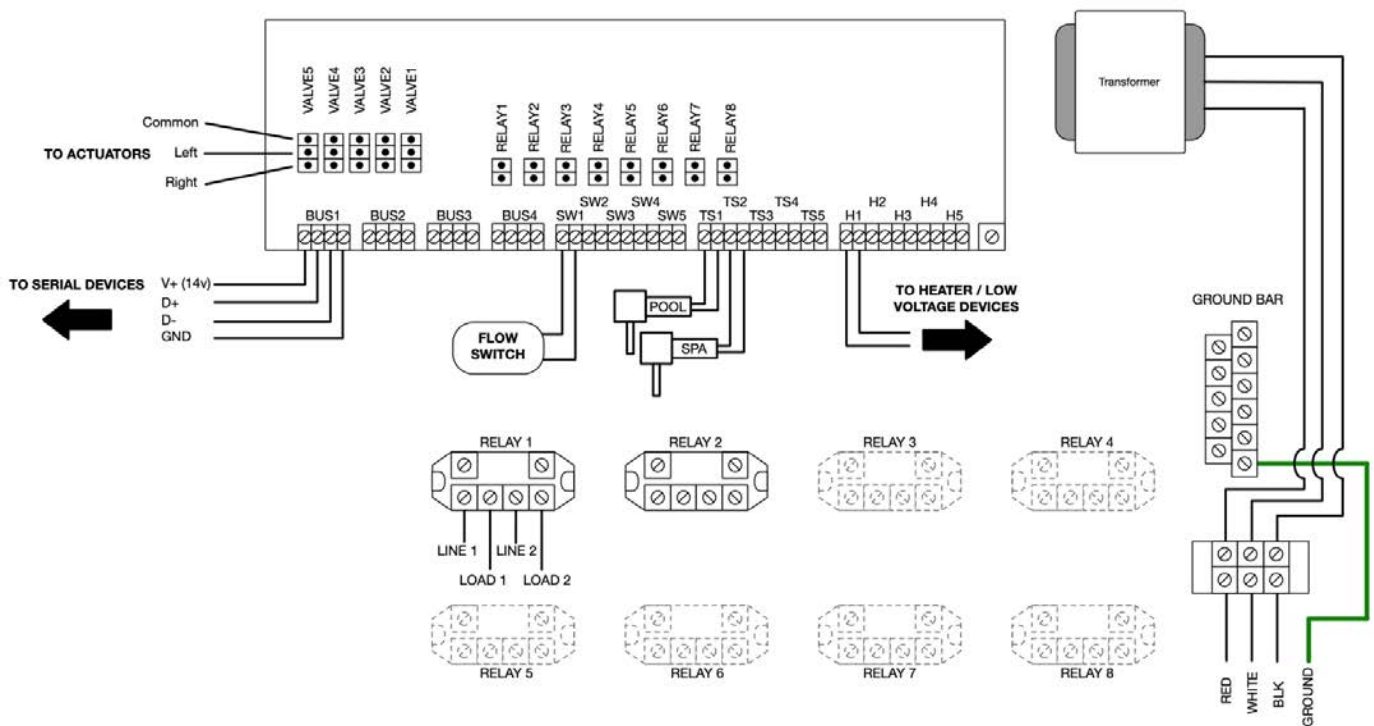
The Attendant has 9 openings for wiring high voltage components towards the right side of the controller and 3 for low voltage components on the left. These compartments are separated by a safety divider inside the controller. Each wiring access hole is sized for ½” conduit.

Controller Layout and Inputs

The controller internals contain two sections each with its own protective cover - one on top and another on the bottom. The top portion of The Attendant houses the main circuit board and the low voltage connection ports (serial communication, sensors, dry relays, etc.) You can access the bottom portion of the controller internals by loosening the 5 screws and then removing the bottom safety cover.

NEVER ACCESS THE CONTROLLER INTERNALS WHILE THE POWER IS ON!

The layout of the bottom portion of the controller:



This bottom portion of the controller contains all of the **high voltage** relays. The high voltage relays connect to the main circuit board by red/black wire to the board connectors labeled **RELAY1-8**. By default, The Attendant ships with two high voltage relays pre-mounted and connected to ports **RELAY1** and **RELAY2**. Depending on your configuration, you may have up to **8** installed.



WARNING

Electric Shock Risk

All high voltage wiring must be done by a licensed electrical contractor.



WARNING

Electric Shock Risk

Ensure power to the controller is disconnected before removing the safety cover and proceeding with any wiring.



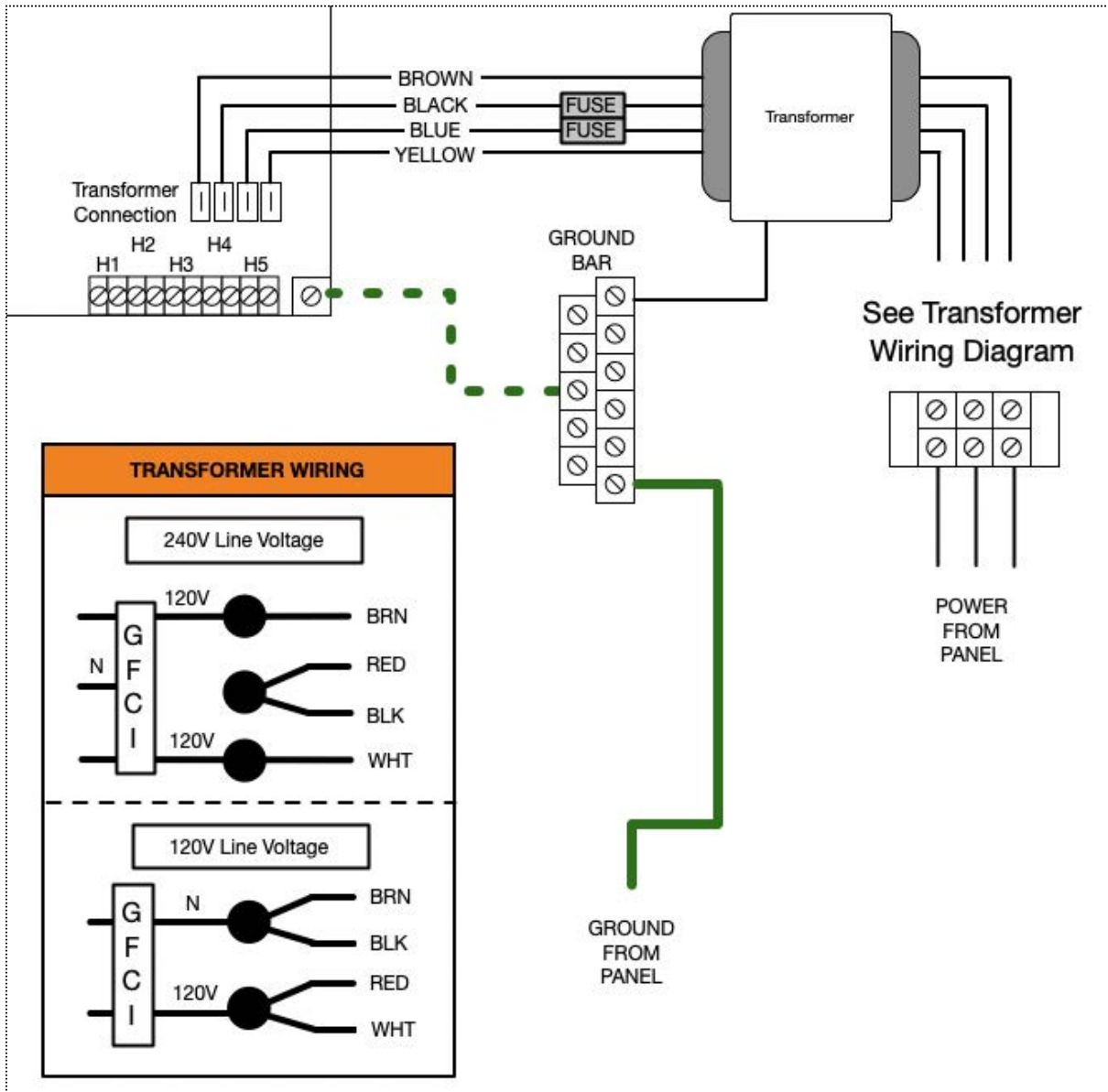
WARNING

Electric Shock Risk

Ensure power to the pool equipment is disconnected before proceeding with any wiring.

Connecting The Attendant to the Main Power Supply

Power is supplied to The Attendant via the power supply bridge on the right side of the controller. Please review the **following wiring diagram** to determine how the connection should be wired using a **120v or a 240v** supply. You **must ensure** you connect the **ground wire to the ground bar** when connecting the controller to the main power. Use only **copper** conductors when making connections to The Attendant controller and its components.





WARNING

Electric Shock Risk

Turn off the power supply to the panel before attempting to make any connections. Failure to do so may cause injury or death.

Equipment Wiring Connections

The Attendant connects to your pool equipment via specific connectors.

- **BUS1 - BUS4** - Serial communication ports used to control devices using commands rather than power switching.
- **VALVE1 - VALVE5** - 24 VAC powered valve actuator controller ports.
- **SW1 - SW5** - 5 VDC switch-type ports used for devices like flow switches, pool covers, etc.
- **TS1 - TS5** - Temperature sensor ports used for thermistors and devices like pool covers and water level sensors.
- **H1 - H5** - Dry-contact ports typically used for control of devices that work in power stages rather than variable rate controls.
- **RELAY1 - RELAY8** - High voltage relays that are used to control single or multi-stage devices like pumps, lighting, etc.

The high voltage relays in The Attendant controller are double pole and rated at 3THP/30A for 240V and 1.5THP/30A for 120V equipment. With the exception of bringing power to the controller box and connecting it via the terminal connector, all high voltage connections are made through the use of high voltage relays.

The sections that follow discuss the typical wiring configurations for the devices that get connected to The Attendant.

Be sure to use the table in [Appendix A \(Connection Table\)](#) to record all connections for future reference and troubleshooting.



DANGER

Electric Shock Risk

Do not connect power to The Attendant until all electrical connections for all loads (pumps, valves, lights, etc.) have been completed.



WARNING

Electric Shock Risk

All high voltage wiring must be done by a licensed electrical contractor.



WARNING

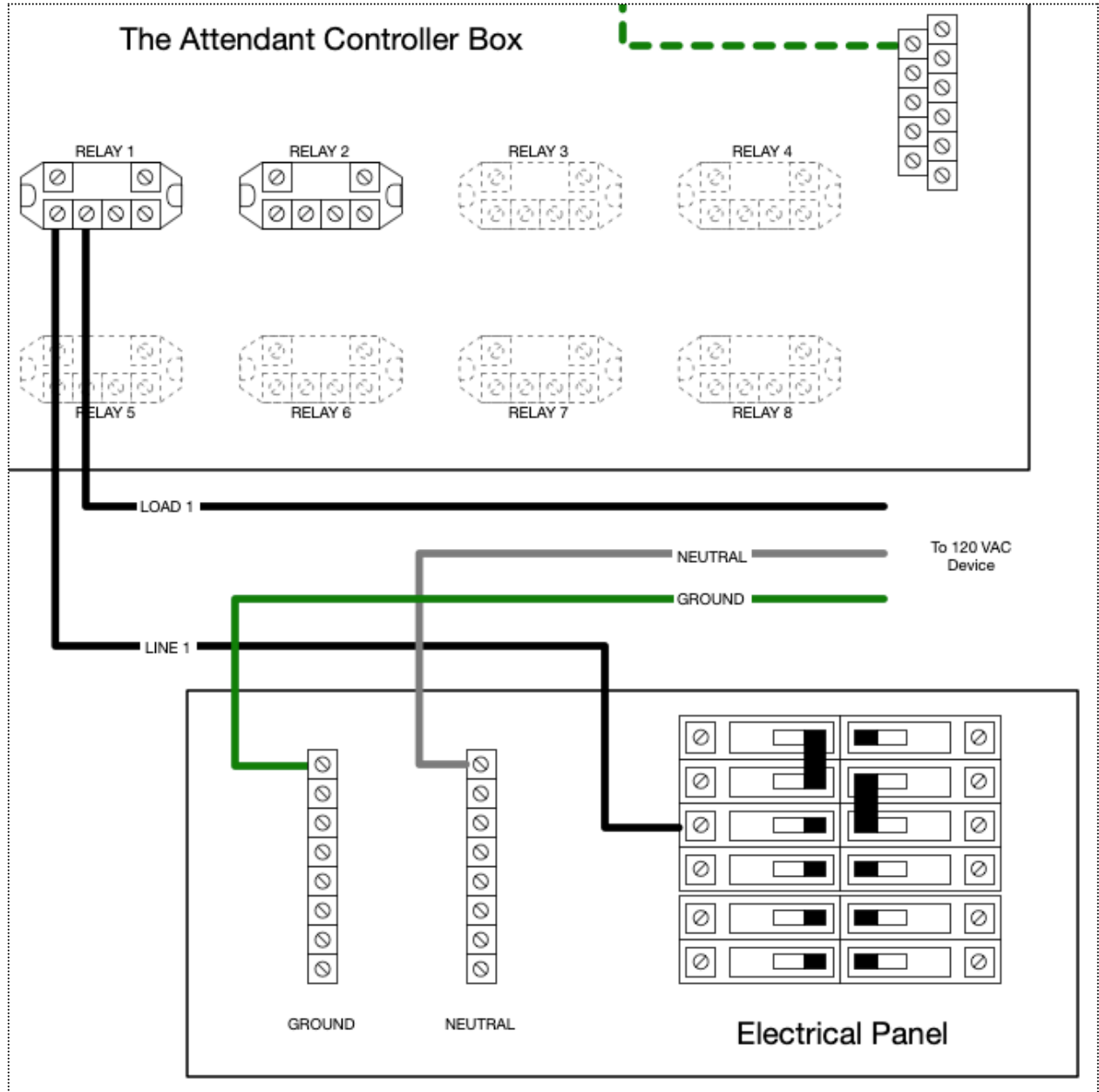
Electric Shock Risk

The Attendant controller requires the ground from the panel to be connected to the ground bar inside the controller box in order to ensure that the system is properly grounded.

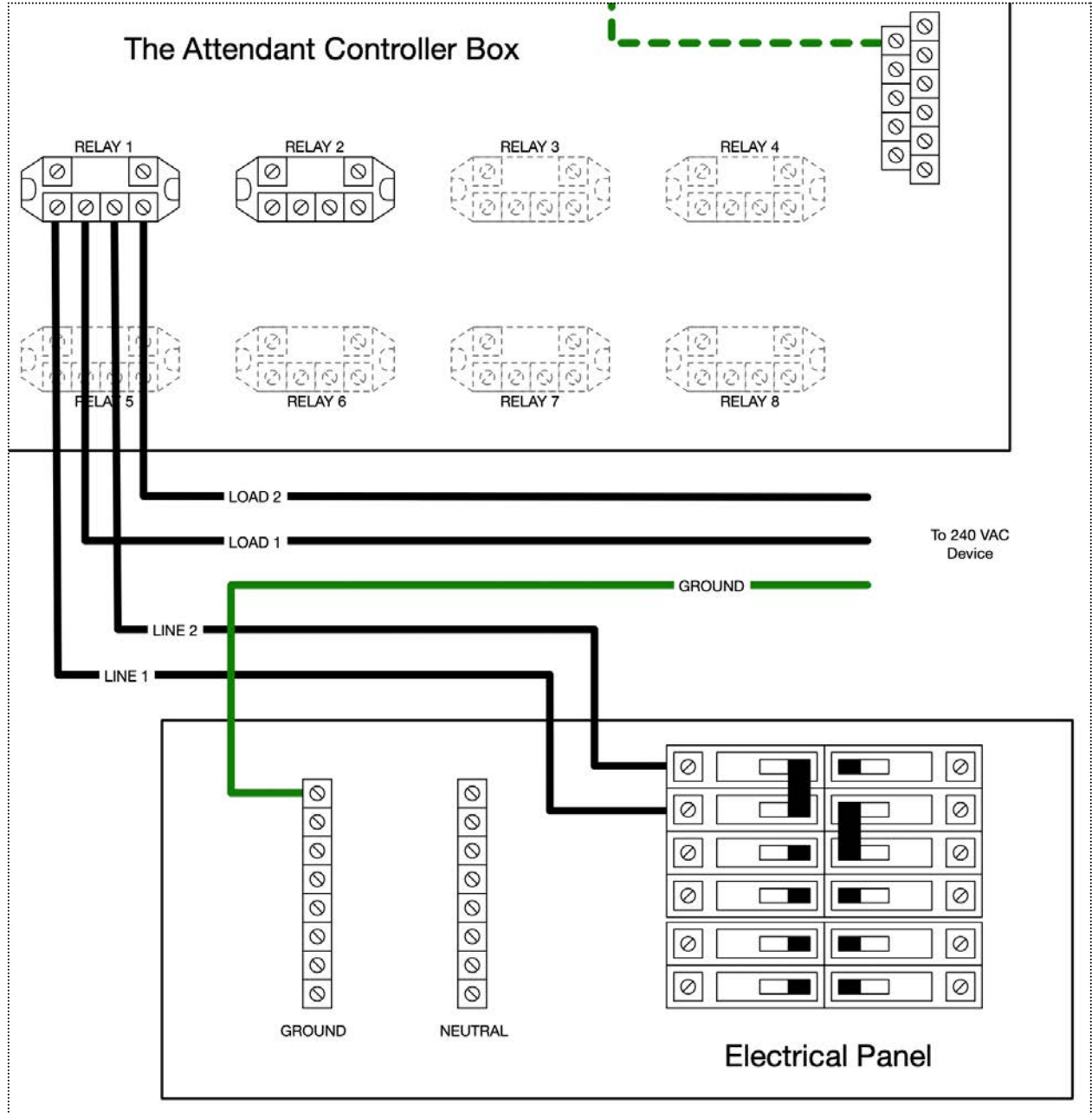
Single Speed Water Pumps

The Attendant controller controls single speed filter pumps by powering them on and off via a high voltage relay. See the wiring diagrams that follow for both 120 VAC and 240 VAC.

120 VAC Device Connection:

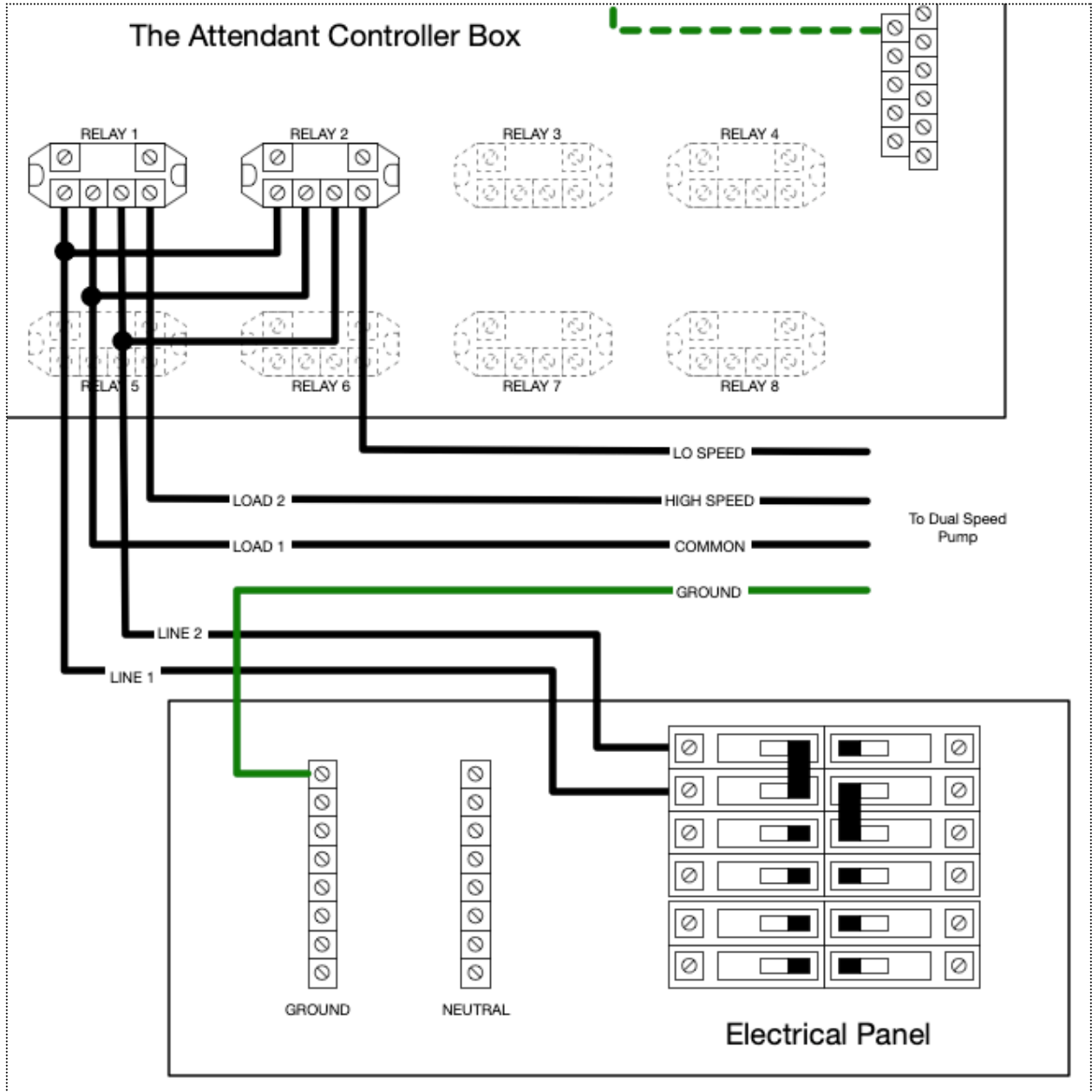


240 VAC Device Connection:



Dual/Multi-Stage Water Pumps

The Attendant controller controls dual- and multi-stage filter pumps by using two high voltage relays (one for each stage). See the following wiring diagram:



A Note About Connecting Equipment via Communication Cables

Several pieces of equipment like variable speed pumps and salt cells will require you to connect these devices to the serial (BUS1-4) communication ports. This equipment will not be powered by the relays onboard The Attendant, so connect these devices directly to the electrical panel following the manufacturer's instructions.

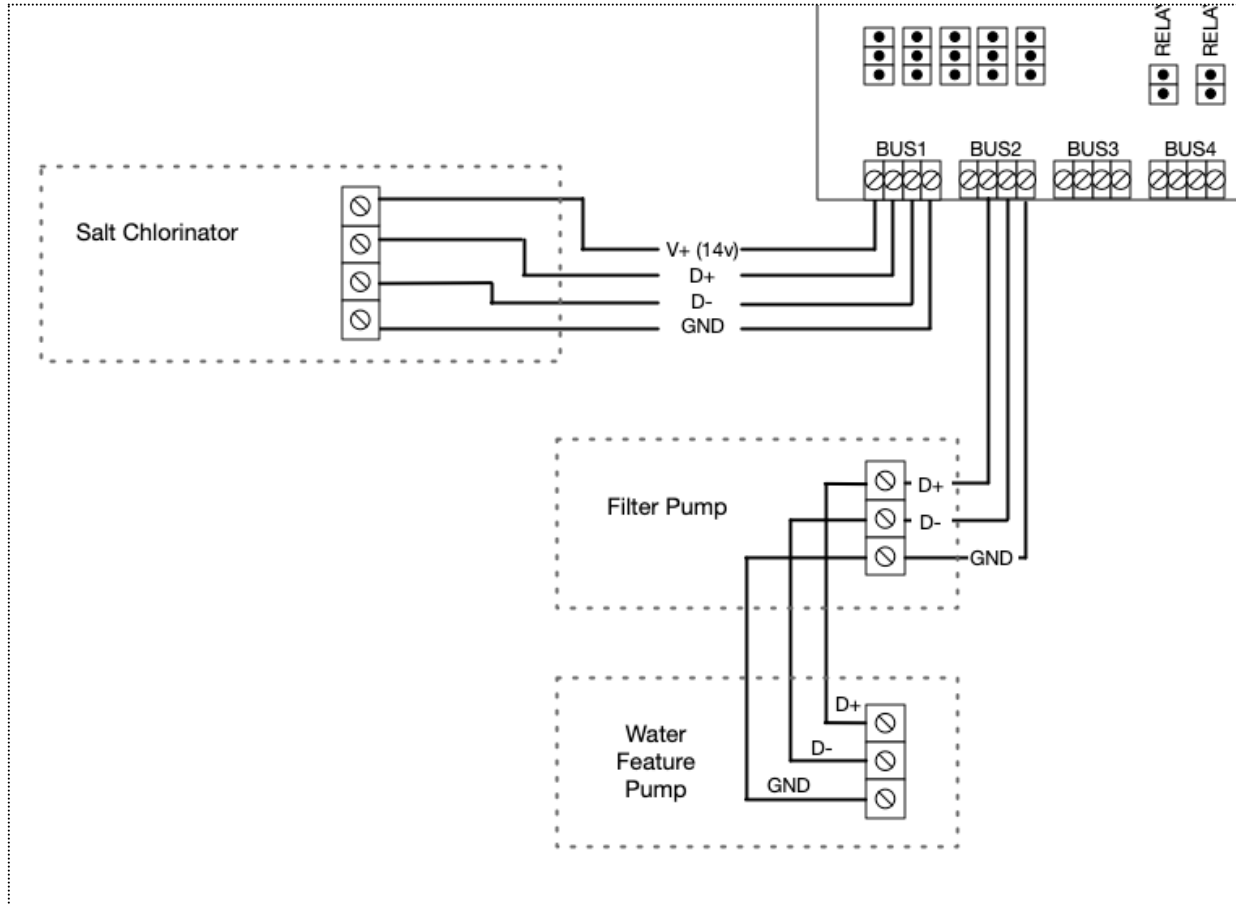
The Attendant controller comes with four communication (serial) bus connections that are used to control and monitor these types of devices. Typically one device is connected to one port, however, several models allow you to chain multiple, similar devices together into one channel. An example of how similar devices are wired follows on the next page.



NOTE

It is important that you do **not** mix and match device types on a single communication bus when chaining. This can lead to unexpected equipment behavior or even malfunction. Device types can be defined as legacy Hayward pumps, Hayward HUA pumps, Pentair and Jandy pumps, Goldline-compatible salt chlorinators, Jandy RS-485 heaters, etc.

Example: single device connected to *BUS1*, chained devices connected to *BUS2*:



NOTE

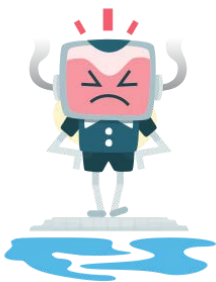
Some salt chlorinator products require a voltage be supplied via the communication bus connection in order to function properly. Please refer to the manufacturer's documentation or check our website for a list of known salt chlorinators that require this.

Variable Speed Water Pumps

All variable speed pumps are required to be powered directly from the electrical panel. Only the communication line that controls the pump physically connects to The Attendant.

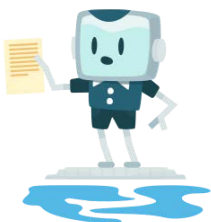
Usually the connection to The Attendant will be via one of the serial (BUS1-4) communication ports. On rare occasions, some variable speed pumps will need to be controlled using either low- or high-voltage relays. These models typically offer a set number of speeds (typically 4) and they can be wired using the instructions that came with the pump combined with the [single-speed](#) and [multi-stage](#) installation instructions in this manual.

As noted in [A Note About Connecting Equipment via Communication Cables](#) section of this manual you can either chain devices together, insert more than one into the connector at the control board or utilize the different BUS1-4 ports available in the event you have a lot of devices to communicate with.



WARNING

Don't set the minimum and/or maximum speed values via the pump controls as this could cause your pumps to stop working. This must be done in the Attendant mobile app using Installer mode.



NOTE

It is important that you **do not mix and match device types** on a single communication bus. This can lead to strange equipment behavior or even malfunction. Device types can be defined as legacy Hayward pumps, Hayward HUA pumps, Pentair pumps, Jandy pumps, Goldline-compatible salt chlorinators, Jandy RS-485 heaters, etc.

Hayward EcoStar Pumps

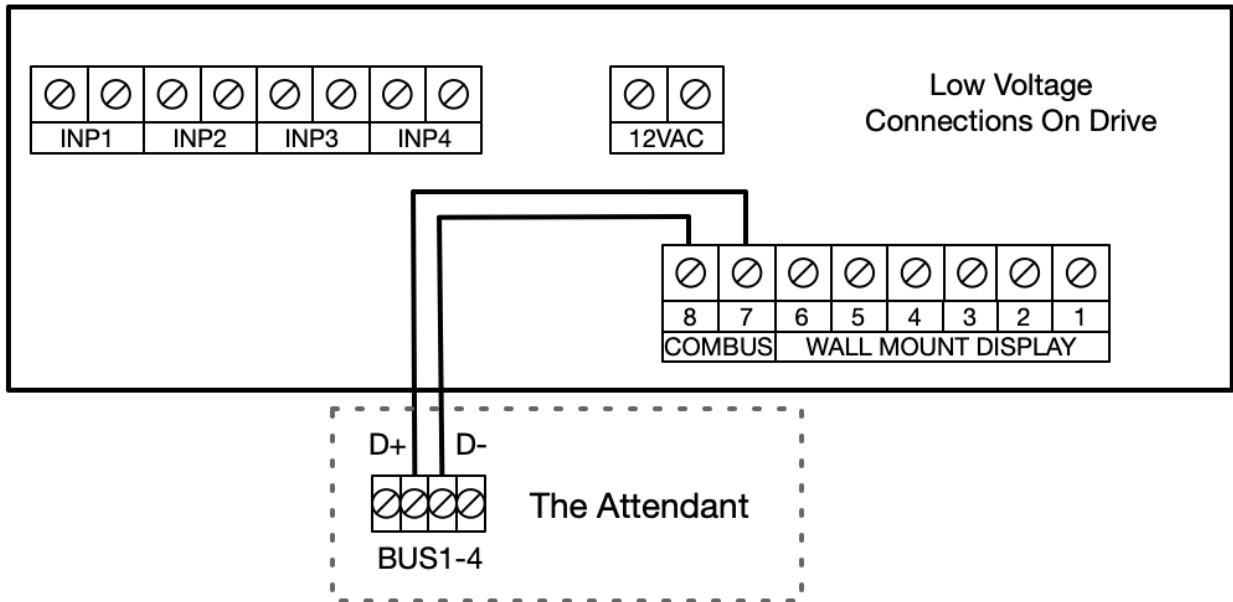
In order to communicate with the Hayward **EcoStar** pump you will need to connect one of the serial (BUS1-4) communication ports on The Attendant, labeled **D+ and D-**, to the **#7 and #8 COMBUS** connectors on the pump's low voltage connection block.



IMPORTANT

There have been several generations of the EcoStar variable speed pump. If your pump has the ability to set the COMBUS address via the pumps configuration menu, then it is likely that the older pump version does not support using a Hayward Unique Address (HUA). You will need to ensure you choose the right address for the pump. It is likely this is the *Pool Filter* setting but the unique situation of your pool setup may dictate that its address is set to something different.

The connection diagram that follows works for all generations of the EcoStar pump regardless of whether HUA is available:



Hayward TriStar / MaxFlo / Super Pumps

Serial RS-485 Connection (BUS1-4)

The Attendant can communicate with these pump models in a number of different ways. Your available connectivity options are determined by your pump model and manufacturing date. The most preferred method is using a Serial RS-485 communication using Hayward Unique Address (HUA). This approach provides you with the ability to precisely control pump speed and read back any errors reported by the device. Most pumps manufactured after 2017 support this protocol.

Pumps manufactured **prior to 2017** support Serial RS-485 communication using a **manually-declared address**.

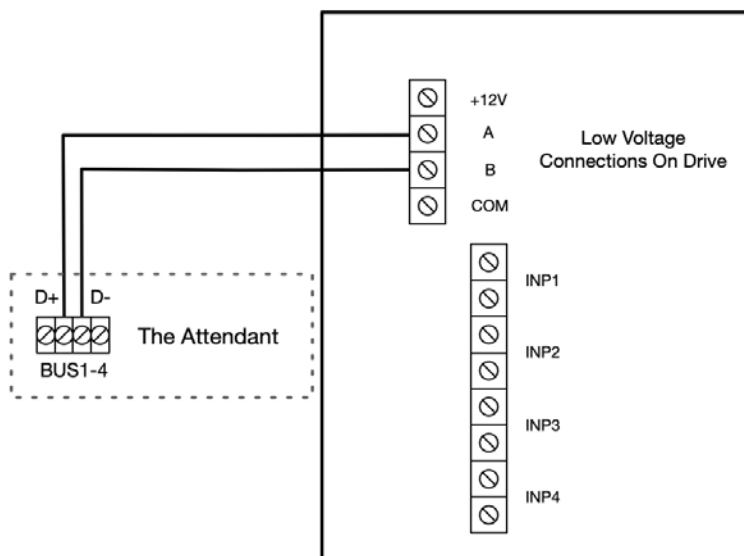
Finally, you can always activate preset speeds using dry contact relay ports and inputs 1 - 3 on the pump.

Connecting Using the Hayward Unique Address (HUA) for Pumps Manufactured after 2017 (Recommended)

In order to communicate with the Hayward pump via the **HUA** you must connect terminals **A and B** on the pump's low voltage connection block to one of the communication bus data ports (BUS1-4) on the The Attendant, labeled **D+ and D-**.

When connecting to the pump in this manner ensure the **SW200 DIP switch** on the pump is set **OFF**.

Connections to Hayward TriStar/MaxFlo/Super Pump:





NOTE

Most pumps that have a HUA address come with a sticker that lists this address. The address is a series of 5 two digit numbers like this xx-xx-xx-xx-xx

Connecting Using a Manual Address Configuration for Pumps Manufactured Prior to 2017 (BUS1-4)

In order to communicate with the Hayward pump **manually** you must connect terminals **A and B** on the drive's low voltage connection block to one of the communication bus data ports (BUS1-4) on the controller, labeled **D+ and D-**. Refer to the previous connection diagram under HUA for details on how to wire this configuration.

Additionally, you must ensure the **SW200 DIP switch** is set according to the following table in accordance with any other devices communicating on the same BUS channel. Once you set the DIP switches, the associated **Bus ID** is used in the configuration of the pump in the Poolside mobile app.

Hayward SW200 DIP Switch Setting

Bus ID	#1	#2	#3	#4	#5
1	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF
3	OFF	OFF	ON	OFF	OFF
4	OFF	ON	ON	OFF	OFF
5	OFF	OFF	OFF	ON	OFF
6	OFF	ON	OFF	ON	OFF
7	OFF	OFF	ON	ON	OFF
8	OFF	ON	ON	ON	OFF
9	OFF	OFF	OFF	OFF	ON
10	OFF	ON	OFF	OFF	ON
11	OFF	OFF	ON	OFF	ON
12	OFF	ON	ON	OFF	ON
13	OFF	OFF	OFF	ON	ON
14	OFF	ON	OFF	ON	ON
15	OFF	OFF	ON	ON	ON
16	OFF	ON	ON	ON	ON

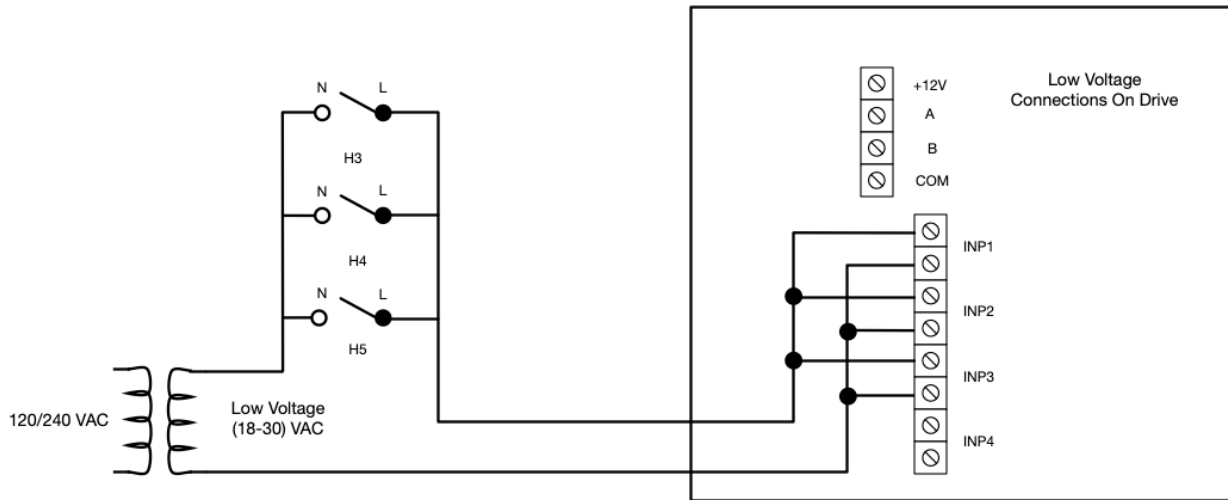
Connecting Using Inputs 1 - 3

In order to control the Hayward pump using **Inputs 1-3**, you may need to **connect an additional low voltage power supply** to the terminals **IN1-3** to the pump's low voltage drive connector block. These three inputs will then need to be **connected** to (and will be controlled from) the dry "Heater" contacts on The Attendant. It is recommended that you use **H3, H4 and H5**.

When connecting to the pump in this manner ensure that **SW200 DIP switch #1** is set to **ON**.

You should also note that preset speeds 1-4 and quick clean functionality will be disabled when the pump is remotely controlled.

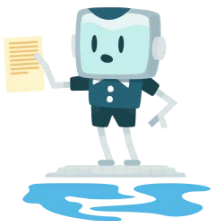
Low voltage wiring connection when using inputs 1-3:



This configuration will allow for a total of 3 different fixed speeds for the pump.

- **Timer Speed 2**
- **Timer Speed 3**
- **Timer Speed 5**

These Timer Speeds are user-configurable by using the “Timer Menu” available on the pump’s configuration display.



NOTE

The EcoStar also supports this configuration but it also provides a low voltage connection via the low voltage panel. Please check the voltage supplied as it has changed over the pump generations.

Pentair IntelliFlo i1 and i2 / IntelliPro / WhisperFlo Pumps

Serial RS-485 Connection (BUS1-4)

In order to connect a Pentair **IntelliFlo** variable speed or variable flow pump to The Attendant you will need to connect the **DT+ and DT-** lines coming from the pump to the **D+ and D-** connectors on The Attendant. These are typically the **yellow** wire for **DT+** and the **green** wire for **DT-** and connect to terminal #2 and #3 respectively on the pump.



NOTE

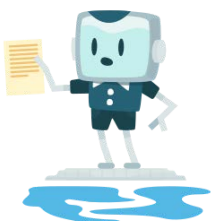
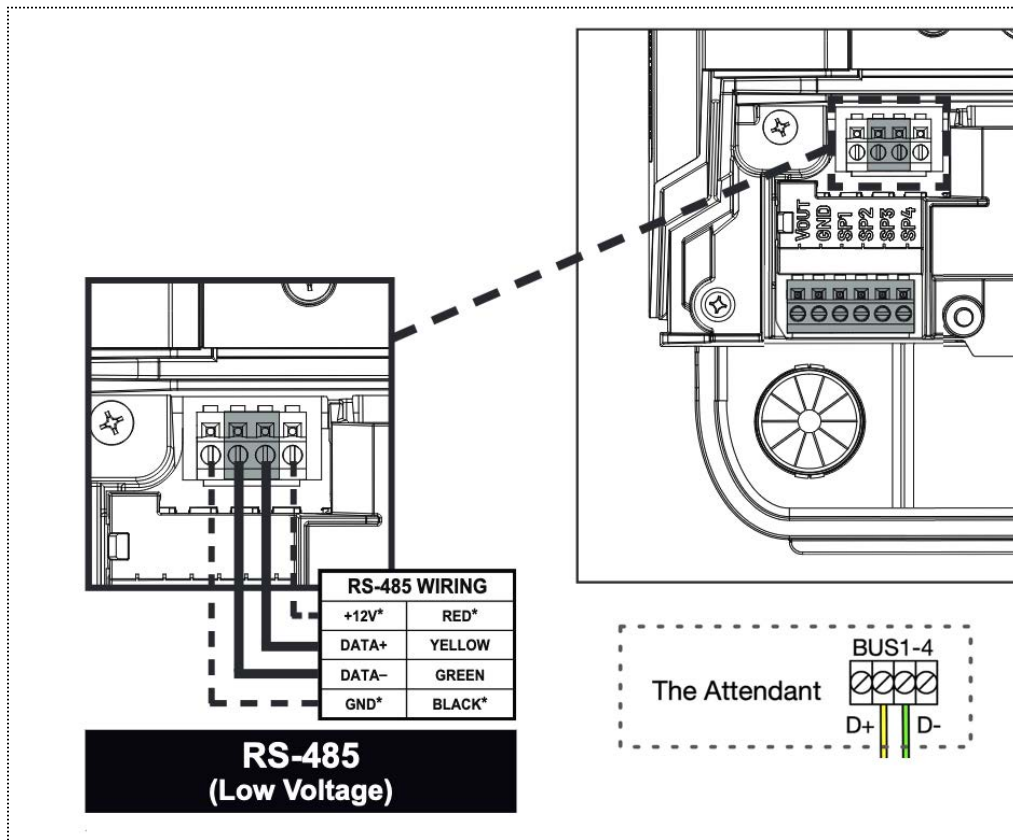
You may need to first disable control at the keypad device on the pump. If you wish to do so please refer to the manual supplied with the pump.

Pentair IntelliFlo3 and IntelliPro3 Pumps

Serial RS-485 Connection (BUS1-4)

You need to connect a 18-24 AWG, two wire cable from the RS-485 port on the pump to an available BUS port on The Attendant. Connect the **Yellow to D+** and **Green to D-**. Do not connect the Red and Black wires to The Attendant.

If the connection is successful, you will see the **Connect** button light on the pump switch to a **pink** color.



NOTE

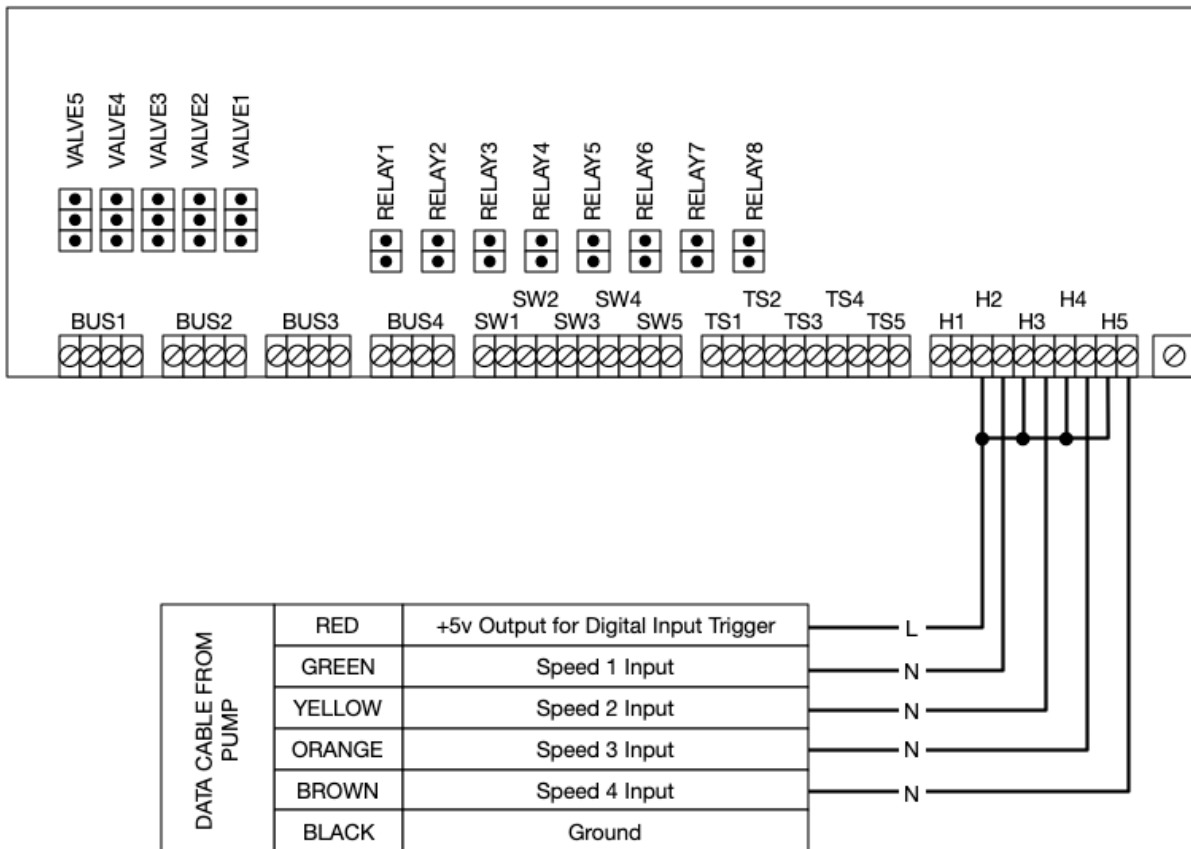
Older versions of The Attendant software do not explicitly list the IntelliFlo3 pump. In this case please select IntelliFlo VSF from the dropdown menu.

Pentair SuperFlo Pumps

For Models Manufactured Prior to December 2020

This is a multi-stage pump that allows for control of up to four preset speeds. This should be connected and wired to **four of the dry-contact H1-5 relays** on The Attendant.

When wiring the pump, you must tie the supplied 5V power out (from the pump) to each stage so that The Attendant can control each speed setting available as shown in the following diagram.





NOTE

If you are not using the supplied 5V from the pump you will need to utilize the Flow Switch connectors on The Attendant board labeled SW2 to SW5 that supply this voltage to the pump



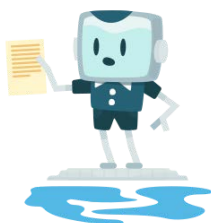
NOTE

SuperFlo pumps manufactured prior to December 2020 do not permit precise RPM control over pump speed and may limit the amount of energy savings The Attendant can provide. If you own a newer SuperFlo model you may connect it to The Attendant using the same method as the IntelliFlo.

For Newer Models Manufactured After December 2020

To connect Pentair **SuperFlo pumps manufactured after December of 2020**, you will first need to have the correct wiring kit from Pentair. You can use either Pentair part **#356324Z** or **#350122**. Each of these kits provide the correct number of connection wires to connect the pump to The Attendant. Please note that there is another, similar Pentair kit with a part #353129Z - this is not the right part and is not compatible.

Once you have the correct wiring kit, you can connect the pump to The Attendant by using one of the serial (BUS1-4) communication ports in the same way that an IntelliFlo pump would - by connecting the **DT+ and DT-** lines coming from the pump to the **D+ and D-** connectors on The Attendant. These are typically the **yellow** wire for **DT+** and the **green** wire for **DT-** and connect to terminal #2 and #3 respectively on the pump.



NOTE

You may need to first disable control at the keypad device on the pump. If you wish to do so please refer to the manual supplied with the pump.

Jandy ePump / VS Plus Pumps

Serial RS-485 Connection (BUS1-4)

Connecting the Jandy ePump requires connecting the wires from **pins 2 and 3 (black and yellow)** from the supplied Jandy ePump connector **to the D+ and D-** lines on one of the four communication bus terminals on The Attendant controller (labeled BUS1 through BUS4). For reference, typically the black conductor is the positive and the yellow conductor is the negative.

Set DIP switches #1 and #2 to OFF in order to allow automation system communication.

Pump address (bus identifier) is configured using switches #3 and #4. Please configure the desired address using the table below. If you have more than one pump connecting to a single bus port each pump must have a unique address.

Jandy ePump DIP Switch Pump Address

Pump Address	Switch #3	Switch #4
Pump 1	OFF	OFF
Pump 2	ON	OFF
Pump 3	OFF	ON
Pump 4	ON	ON

Jandy VSFloPro Pumps

The Jandy VSFloPro can be controlled either with the RS-485 communication bus or via the dry contact on the back of the pump.

Before attempting to wire the pump to The Attendant, you'll need to remove the Local Controller display (JEP-R or iQPUMP01) following the instructions in the pump manual.

1. **Remove power** from the pump by disconnecting the high voltage lines or by turning off or deactivating any breaker to which the pump power is connected.
2. **Lift up the controller cover** on its hinges to access the variable-speed controller.
3. **Remove the six (6) screws** to disconnect the variable-speed controller from the controller base on the pump motor.
4. **Detach the RS-485 cable** connecting the variable-speed controller user interface to the controller base on the motor. Do not over extend the cable when raising the controller away from the motor.
5. Unscrew the four (4) connector terminals and **disconnect the wires** of the motor cable assembly. **Note: Do not cut the cable**, or you will lose the ability to return to the default factory configuration.
6. Bundle the loose wire into the pocket of the controller base. *This wire will be used if reinstalling the variable-speed controller onto the pump later if needed.*
7. **Secure the pocket cover and gasket** with six (6) screws to the variable-speed controller base on the motor.

Serial RS-485 Connection (BUS1-4)

In order to connect the VSFloPro to The Attendant controller wires from pin 2 and 3 (black and yellow) from the pump connector must be wired to the D+ and D- lines on one of the four communication bus terminals on The Attendant controller (labeled BUS1 through BUS4).

For reference, typically the black wire goes to D+ and the yellow wire goes to D-.

Low Voltage/Dry Contact Connection (H1-5)

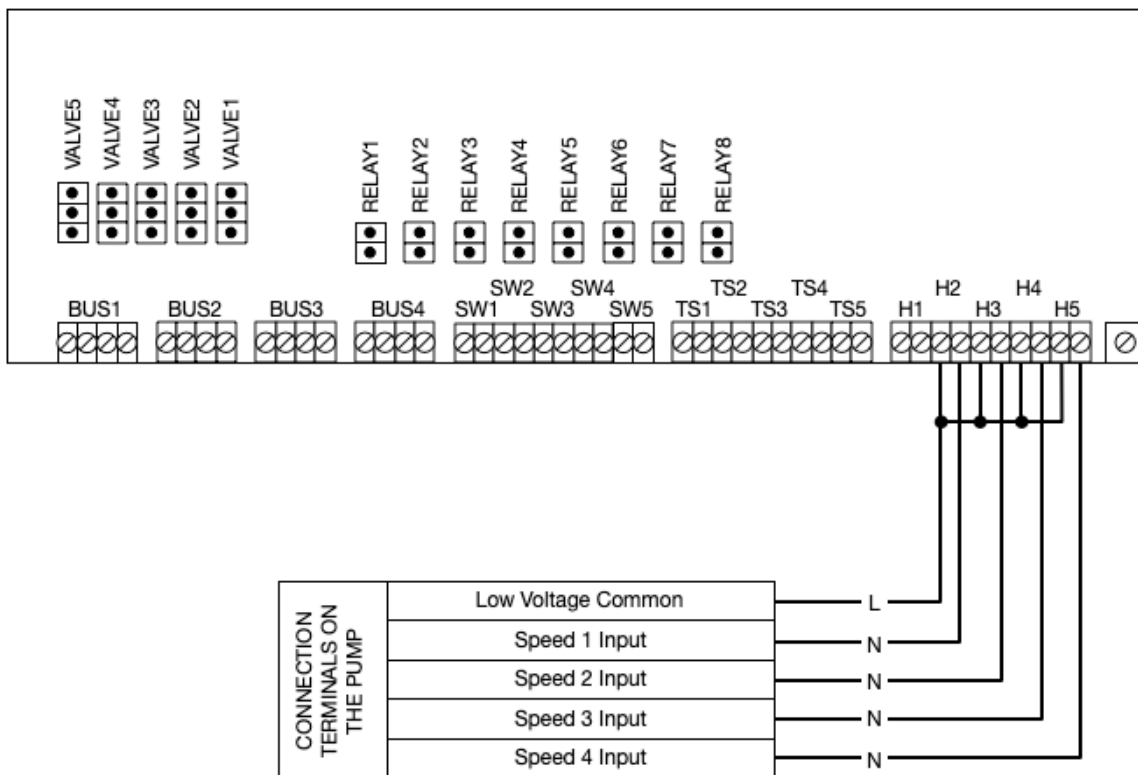
Utilizing four of the dry contact relays (Heater ports) on The Attendant PCB, labeled H1 through H5, the VSFloPro can be set to one of four predefined speeds. This mode does not allow precise control over pump RPM speed and may limit the energy savings seen from using The Attendant controller.

The speeds that are achieved are listed in the following table:

Jandy VSFloPro Dry Contact Speeds

	RPM
Input 1	3000
Input 2	1400
Input 3	2200
Input 4	1725

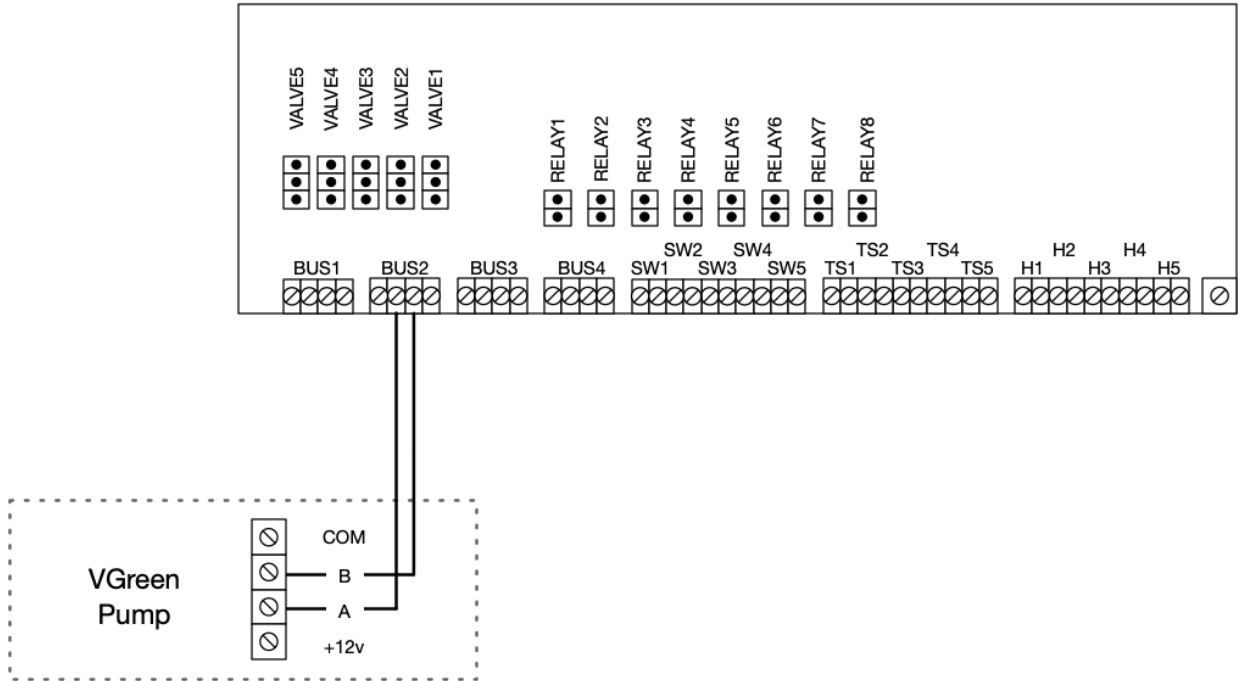
Wiring diagram for Jandy VSFloPro dry contacts:



Century VGreen 085 / 165 / 270 Pumps

Serial RS-485 Connection (BUS1-4)

Connecting the VGreen pump requires connecting the wires from A and B from the pump drive to the D+ and D- connectors respectively on one of the four communication bus terminals located on The Attendant controller (labeled BUS1 - BUS4).



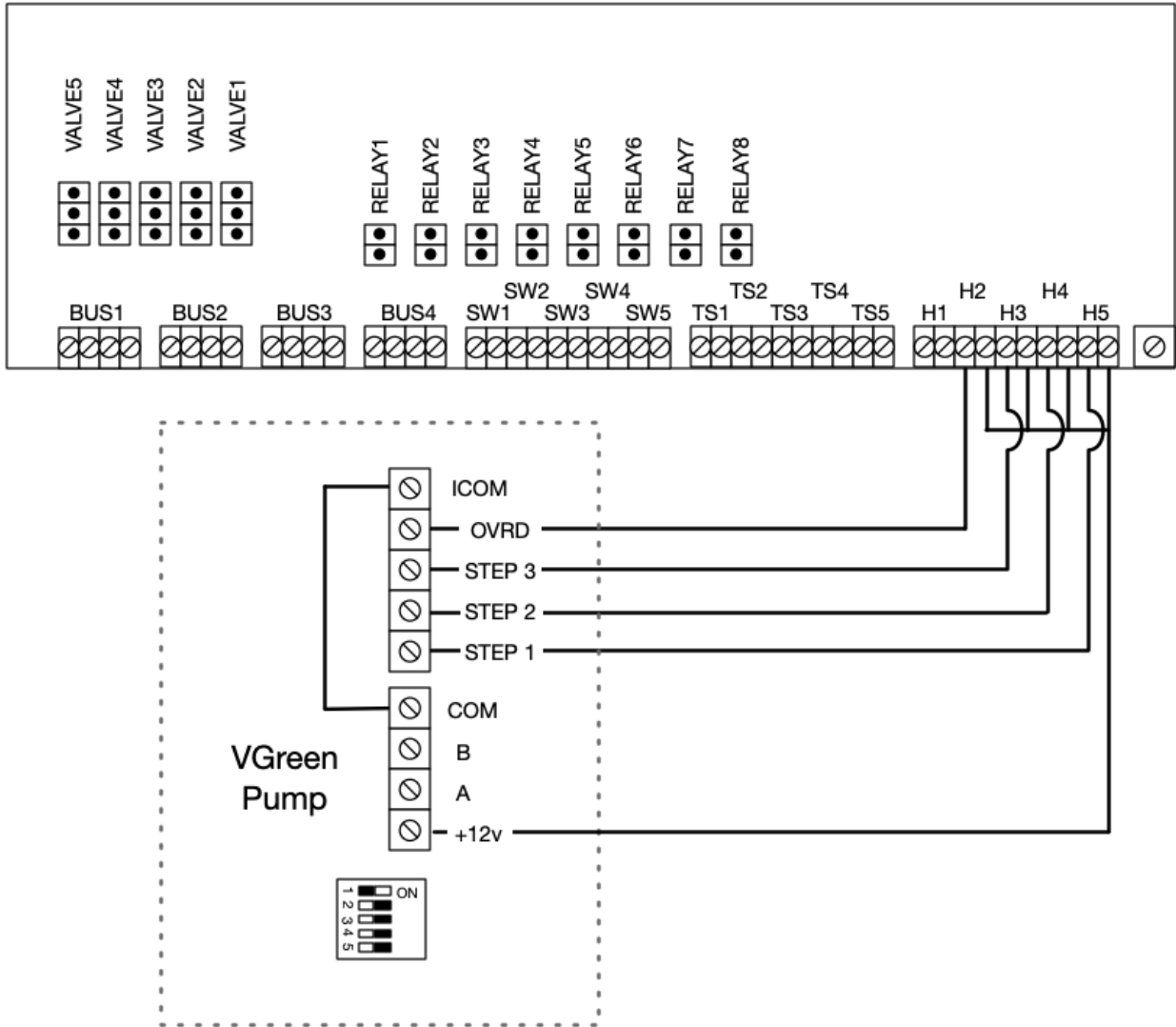
Low Voltage/Dry Contact Connection (H1-5)

Utilizing the dry contact relays (Heater ports) on The Attendant, labeled H2 through H5, the VGreen pump can be set to one of four predefined speeds. Voltage will need to be supplied for this to work and you can connect to the +12v line coming off the RS485 connector in order to have the pump supply it. See the following diagram for the dry contact wiring configuration.



NOTE

In order to apply 12v from the RS485 connector on the pump drive you will need to set DIP switch #1 to ON. All other DIP switches are not used.

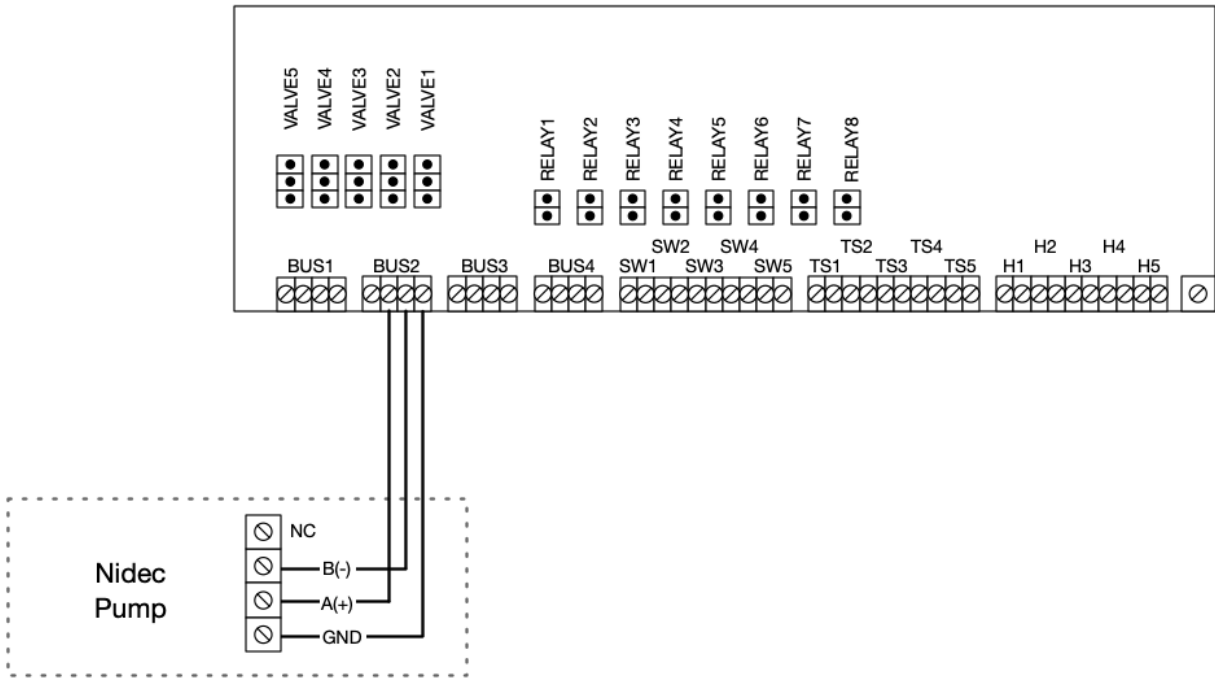


Nidec Neptune (1.65 THP, 2.25 THP, 2.7 THP) Pumps

Serial RS-485 Connection (BUS1-4)

Connecting the Nidec Neptune pump requires connecting the wires from A(+), B(-) and GND from the pump drive to the D+, D- and GND connectors respectively on one of the four communication bus terminals located on The Attendant controller (labeled BUS1 - BUS4).

See the following diagram:



Raypak Protege VSP Pumps

Serial RS-485 Connection (BUS1-4)

Connecting a Raypak Protege pump requires connecting the wires from pins 1 and 2 from 4-pin connector on the pump drive to the D+ and D- connectors respectively to one of the four communication bus terminals located on The Attendant controller (labeled BUS1 - BUS4).

This model pump uses a special SP1310 4-pin wire that connects from the pump to The Attendant.

Typically, you would connect the **brown** wire to **D+** and **blue** to **D-**. **However, the wire colors may change, so you should always confirm which color wire is on pin 1 and pin 2 before attaching them to The Attendant.** You can do this by performing a continuity test from the pins on one end to the wire on the other end.

It is also important to note that the default Slave Address on these pumps is always set to **2**. **Be sure to use 2 as the Bus Identifier when configuring the pump in the mobile app** unless you manually change it on the pump using the Local Controller display.

AquaStar PipeLine Pumps (Smart Models)

Serial RS-485 Connection (BUS1-4)

Connecting a pump requires connecting the wires from the communication cable that comes with the pump to the D+ and D- connectors to one of the four communication bus terminals located on The Attendant controller (labeled BUS1 - BUS4).

- Turn off Power at the Breaker.
- Take the communication cable that came with your pump and feed it into the low voltage side of The Attendant.
- Connect the black and red wires from this cable to the D-/D+ connector on an available BUS port on The Attendant.
- Plug the molded end of the cable into the "Communication Port" on the side of your pump.
- Repeat the above process for each pump you are connecting. Note: you may connect multiple pumps to the same BUS port on The Attendant.



In order to be controllable from The Attendant, you will need to configure each pump for automation:

- Press "Menu" button to enter the settings menu.
- Use the "Up" and "Down" buttons to highlight the "RS485" option and press "Enter."
- Baud rate is set to 9600 bps. Do not modify this setting.
- Use the "Up" and "Down" to highlight the **Pump Address** and press "Enter" to modify it.
 - The Pump Address is a unique pump ID to be used with The Attendant. You will use this number as the "Bus Identifier" in the mobile app. It is set to "1" by default.
 - If multiple pumps are being controlled using the **same** BUS port, ensure that each pump has its own unique Pump Address.
 - Press "Enter" to edit and then use buttons "Up" "Down" "Left" and "Right" to adjust and press "Enter" to save.
- Press "ESC" button to return to the previous screen or repeatedly press to return to the home screen.

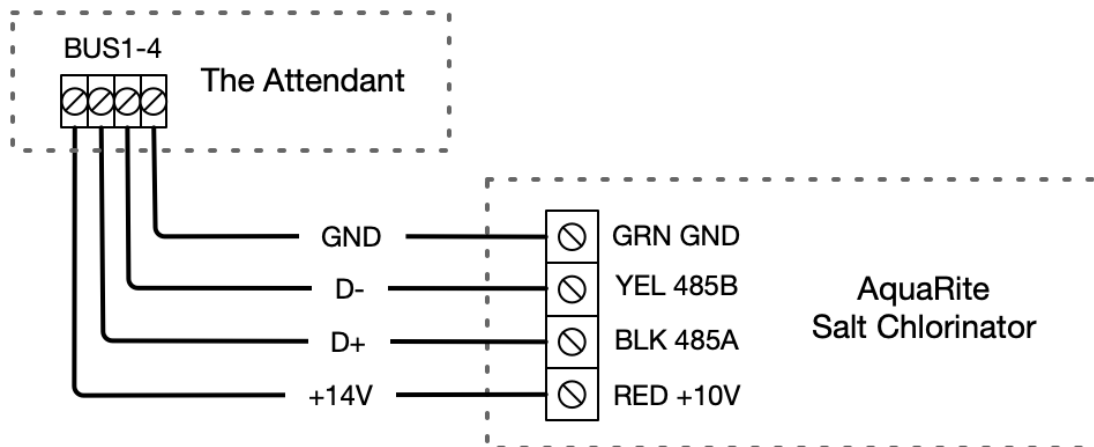
Salt Chlorinators

The Attendant is capable of capturing many of the readings from salt chlorinators manufactured by Hayward, Pentair, Jandy and AquaCal among others. As noted in the Salt Chlorinator section above, some salt chlorinators require voltage be supplied via the communication bus in order to power the on board communication electronics.

Hayward AquaRite

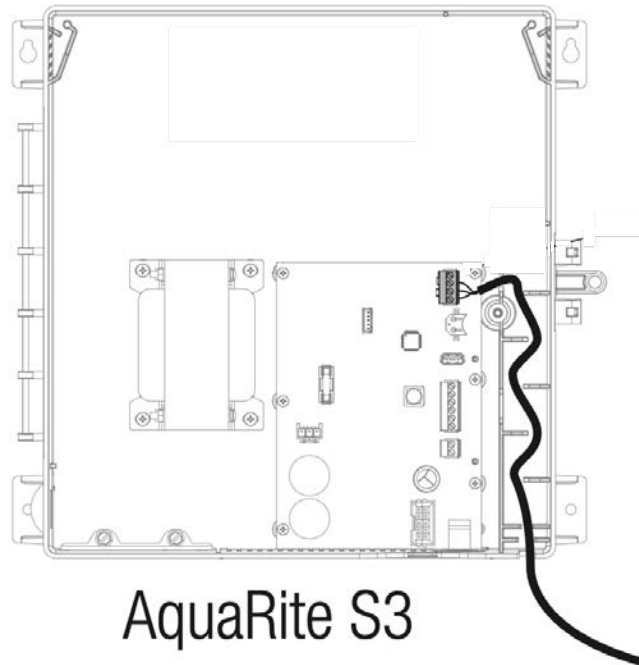
The Hayward AquaRite requires voltage to be supplied in order to communicate. Please reference the following diagram to connect the AquaRite to The Attendant.

Salt cell wiring diagram with 14v supplied via bus connection:



Hayward AquaRite S3

The Hayward AquaRite S3 requires voltage to be supplied in order to communicate. Please reference the following diagram to connect the AquaRite to The Attendant.



AquaRite S3

Aquarite S3	The Attendant
4/G	Gnd
3/Y (Yellow)	D-
2/B (Black)	D+

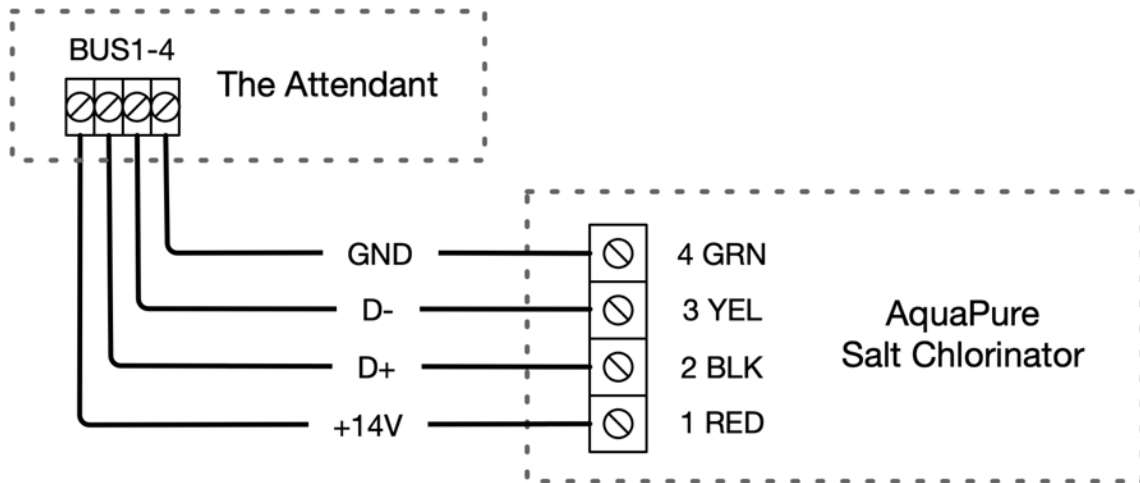
Remote mode must be enabled on the system to allow control by an external automation system. Please follow the following steps:

1. From the Main Menu navigate to System Settings
2. Navigate to Service Settings
3. Navigate to Edit Config
4. Navigate to System Config
5. Highlight Control and press the + key to go to Remote Mode
6. Restart the Aquarite System

Jandy AquaPure

The Jandy AquaPure requires voltage to be supplied in order to communicate. Please reference the following diagram to connect the AquaPure to The Attendant.

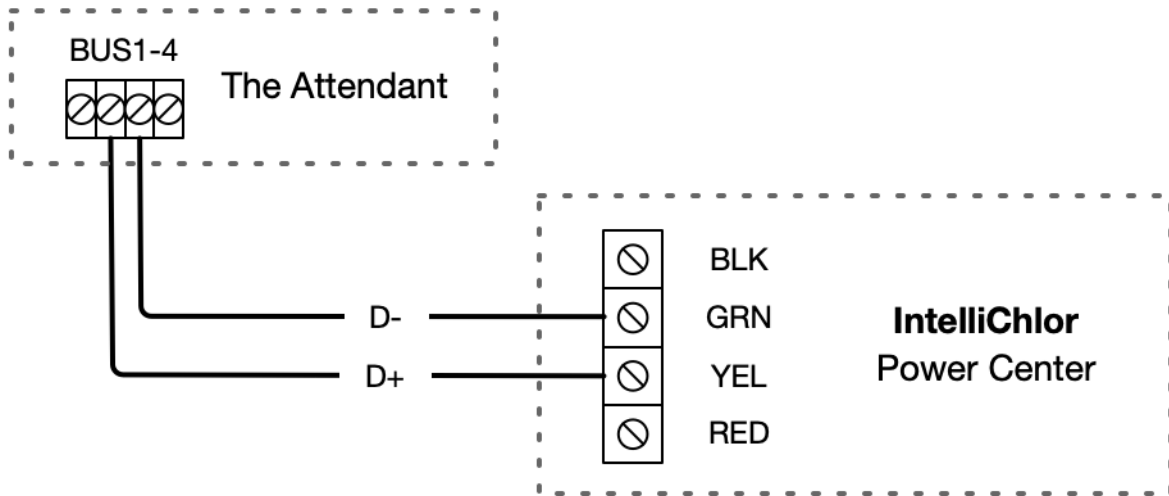
Salt cell wiring diagram with 14v supplied via bus connection:



Pentair IntelliChlor

The Pentair IntelliChlor requires voltage to be supplied in order to communicate. Please reference the following diagram to connect the IntelliChlor to The Attendant.

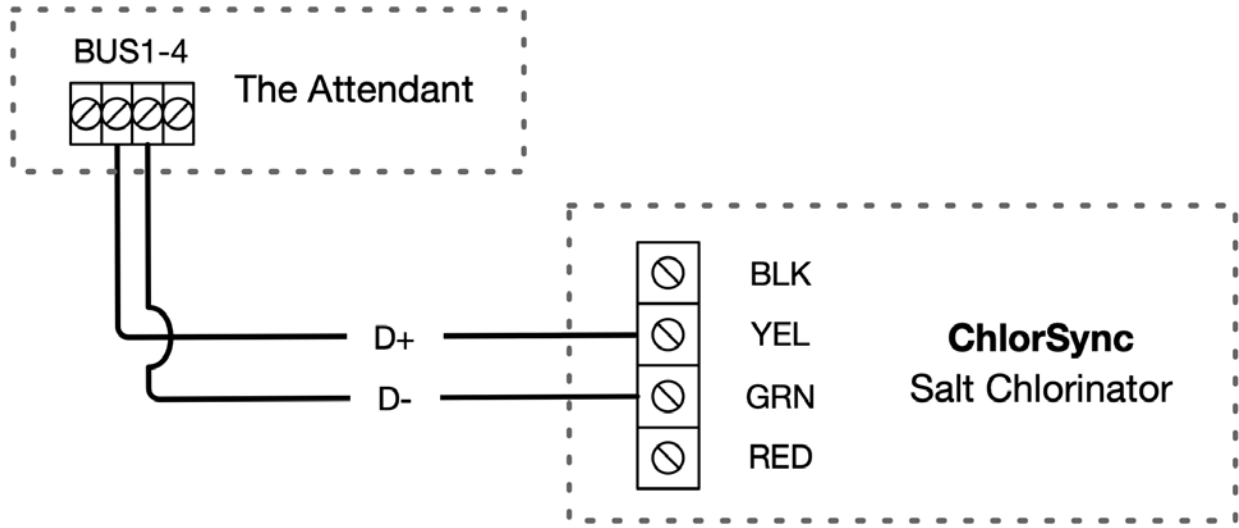
- Chlorinator (YEL) connects to D+ on the Attendant
- Chlorinator (GRN) connects to D- on the Attendant



AquaCal ChlorSync

The AquaCal does not require voltage to be supplied. Please reference the following diagram to connect the ChlorSync to The Attendant.

Salt chlorinator wiring diagram **without** 14v supplied via bus connection:



Heaters and Heat Pumps

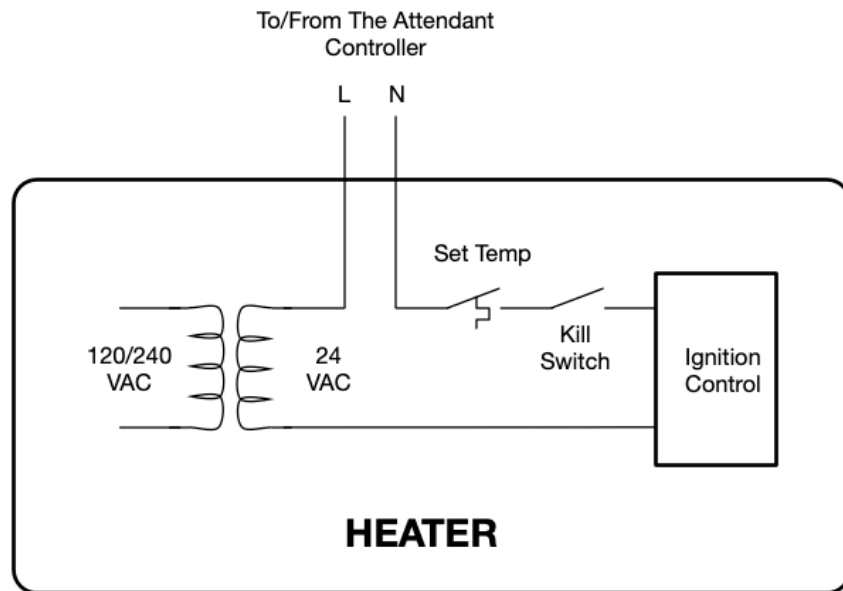
Low Voltage Dry Contacts (HI-5)

The Attendant provides five low voltage dry contacts in the base unit that can be used to control one or more heaters (gas or electric), heat pumps or even low voltage lighting. The manuals provided with most heater/chiller devices will typically provide the specific wiring instructions for connecting to an external control center, in this case The Attendant.

In all cases when using a low voltage dry contact connection:

- Wire the heater to a power source as per the instructions in the heaters manual.
 - Please note: The Attendant does **NOT** control power going to the heater.
- The Attendant should be treated as a regular thermostat/aquastat with simple dry contact call for heat/cool operation.
- Use the appropriate temperature-rated wire; refer to the hardware manual or manufacturer's recommendations. If no guidance is provided, you should use wire that is rated for 105°C.
- The heater's power should be switched to ON when in normal operating mode.
- Set the thermostat on the heater to it's maximum setting.

The following is a typical example of how heaters are wired at the heater:





NOTE

You may need to reference the heaters manual in order to get specific details about how to connect it to The Attendant for remote control.

Serial RS-485 Connection (BUS1-4)

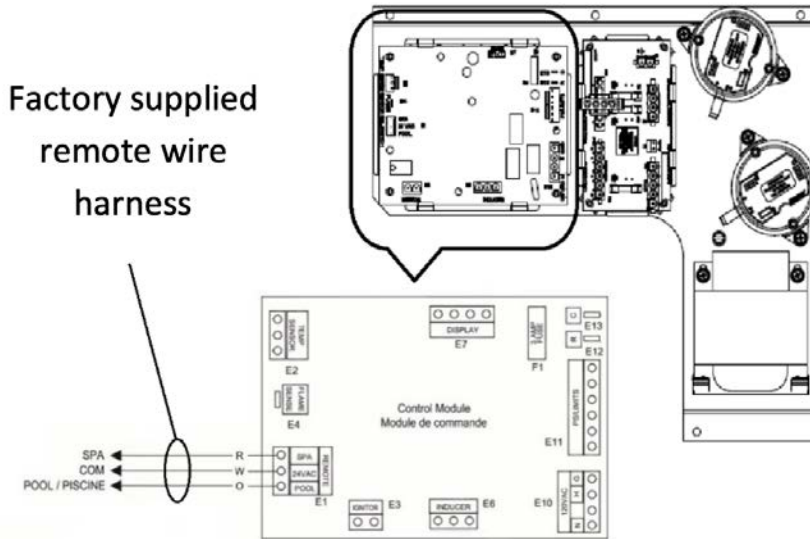
While almost all heaters are able to be controlled via the low voltage dry contacts labeled H1 to H5 or via high voltage relays, many more recently manufactured heaters are capable of being controlled via serial RS-485 communication. One of the main benefits of using RS-485 to control a heater is the additional information that can be obtained from the heater itself in the form of error or operational codes.

When configuring the heater in The Attendant mobile app, ensure you choose the appropriate make/model and a control port of Serial with the port you connected the heater to.

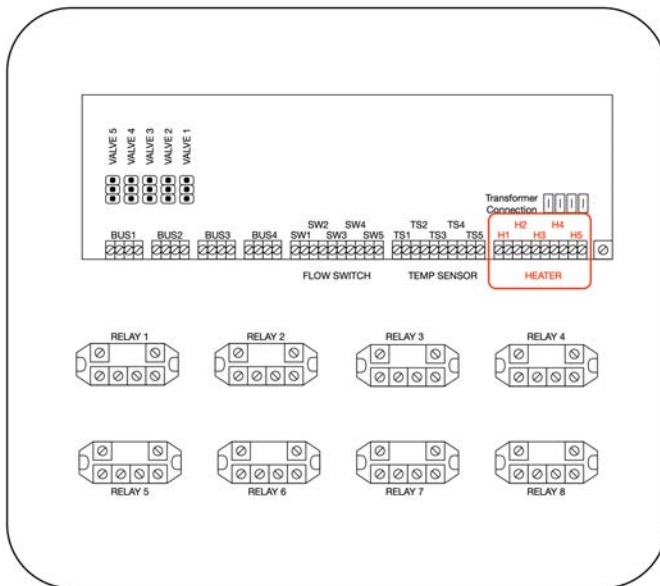
Hayward H-Series Heaters

Hayward heaters are controlled using dry contact/fireman switch connections.

1. Connect a two 22AWG conductor cable to **POOL** and **COM** terminals on the remote wire harness in the heater



2. Connect the other end of the cable to any open Heater port on the Attendant



3. Place the heater into Standby mode by pressing the “Mode” key.
4. Press and hold the “-” key and the mode key simultaneously for 3 seconds. The display should display “BO” meaning that it entered into bypass mode.

Jandy JXi, JRT, and JE Heaters

Jandy heaters can be controlled using legacy fireman switch/dry contact connections or digital Serial RS485 connections.

Dry Contact/Fireman Switch connections allow The Attendant to control the heater on/off state to manage a desired water temperature setpoint

Serial RS-485 connections allow The Attendant to control the heater on/off state to manage a desired water temperature setpoint AND read/report any error codes reported by the unit

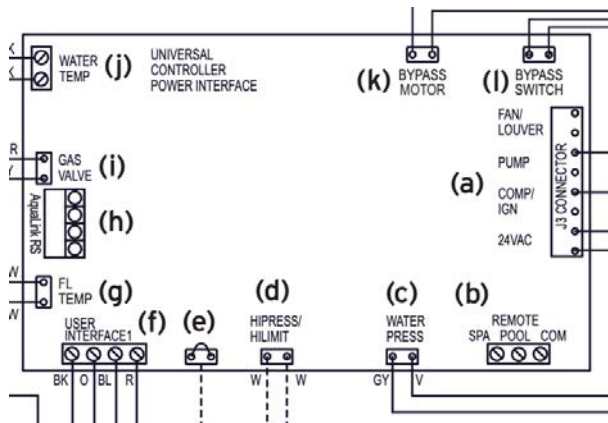
Poolside Tech recommends using Serial RS-485 connections whenever possible, however, it is not required.

Serial RS-485 Connection (Recommended)

Serial RS-485 is a preferred connection method as it allows for accurate heater status and error reporting feedback to be sent to The Attendant.

Controlling the Jandy requires connecting the yellow and black wires from the heaters RS-485 connector (h) to the D+ and D- terminals respectively on one of the communication bus connectors of The Attendant labeled BUS1 through BUS4.

Jandy	The Attendant
Yellow	D-
Black	D+

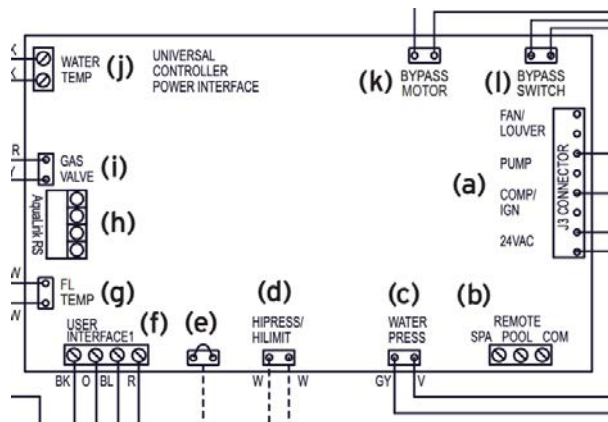


Please follow the procedure below to place the heater into remote mode:

- Make sure the heater is off
- Press and hold MENU, then press and hold the POOL and SPA buttons for 5 seconds to access service mode.
- Press down until the display reads *REMOTE*
- Press MENU - *REMOTE OFF* will be displayed
- Press down until *REMOTE TSTAT* is displayed
- Press MENU
- Press the POOL or SPA buttons to exit service mode

Dry Contact / Fireman Switch Connection

Connect two wires from any available Heater port on The Attendant to the **Remote** connector (b) marked on the diagram. Use the **Spa** and **Com** terminals for your connections on the heater board.



Please follow the procedure below to place the heater into HI-LO-COM mode:

- Make sure the heater is off
- Press and hold MENU, then press and hold the POOL and SPA buttons for 5 seconds to access service mode.
- Press down until the display reads *REMOTE*
- Press MENU - *REMOTE OFF* will be displayed
- Press down until *HI-LO-COM* is displayed
- Press MENU
- Press the POOL or SPA buttons to exit service mode

Pentair MasterTemp Heater

Pentair MasterTemp heaters can be controlled using legacy fireman switch/dry contact connections or digital Serial RS485 connections.

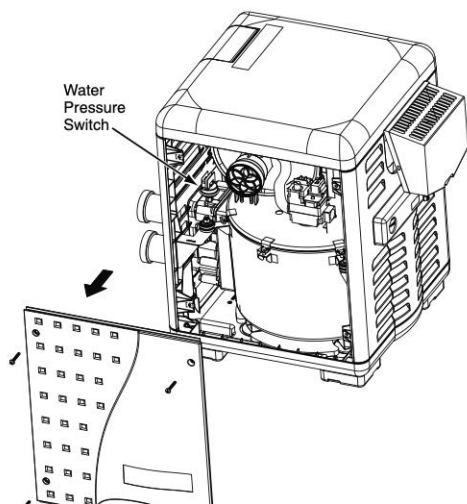
Dry Contact/Fireman Switch connections allow The Attendant to control the heater on/off state to manage a desired water temperature setpoint

Serial RS-485 connections allow The Attendant to control the heater on/off state to manage a desired water temperature setpoint AND read/report any error codes reported by the unit

Poolside Tech recommends using Serial RS-485 connections whenever possible, however it is not required.

Serial RS-485 Connection (Recommended)

1. Remove the four corner wing nuts that secure the top panel. Lift the top panel upwards to remove the top panel.



2. Locate the small hole in the exhaust panel for the RS-485 cable. Use an appropriate drill bit to for flexible conduit to be used.

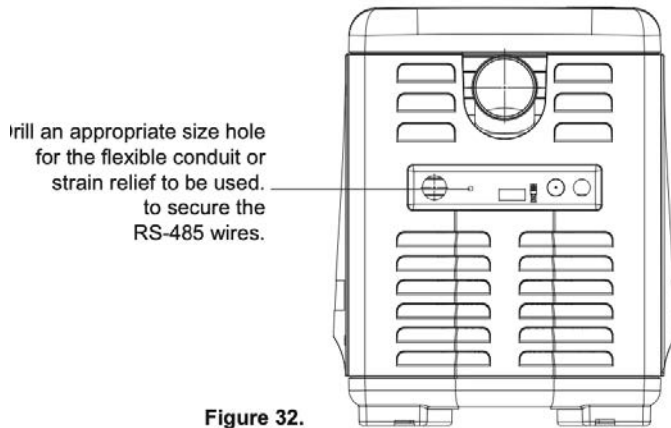
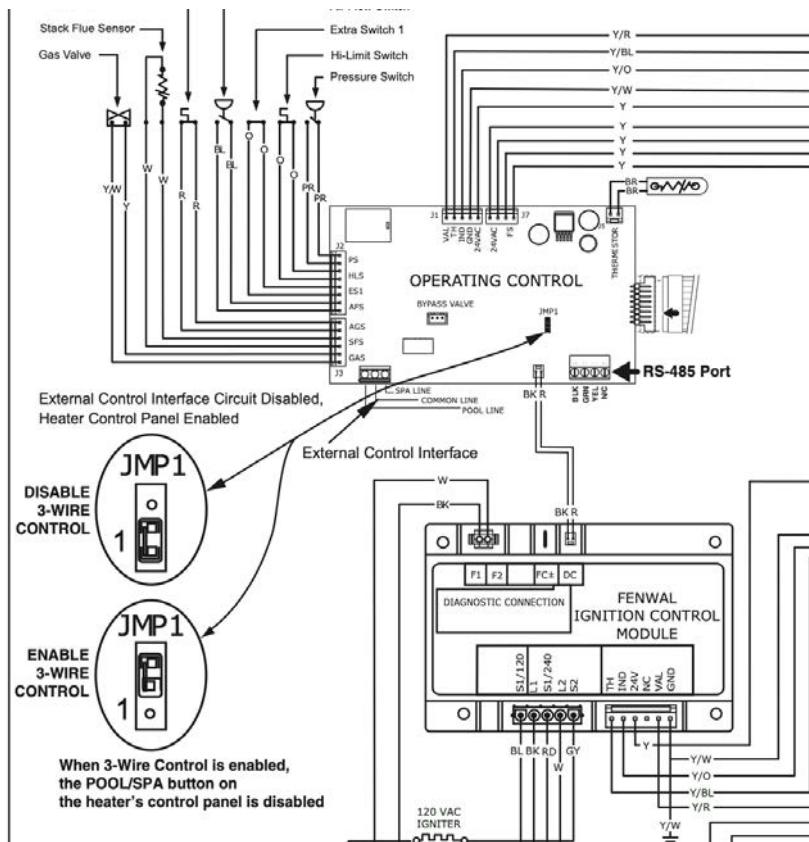
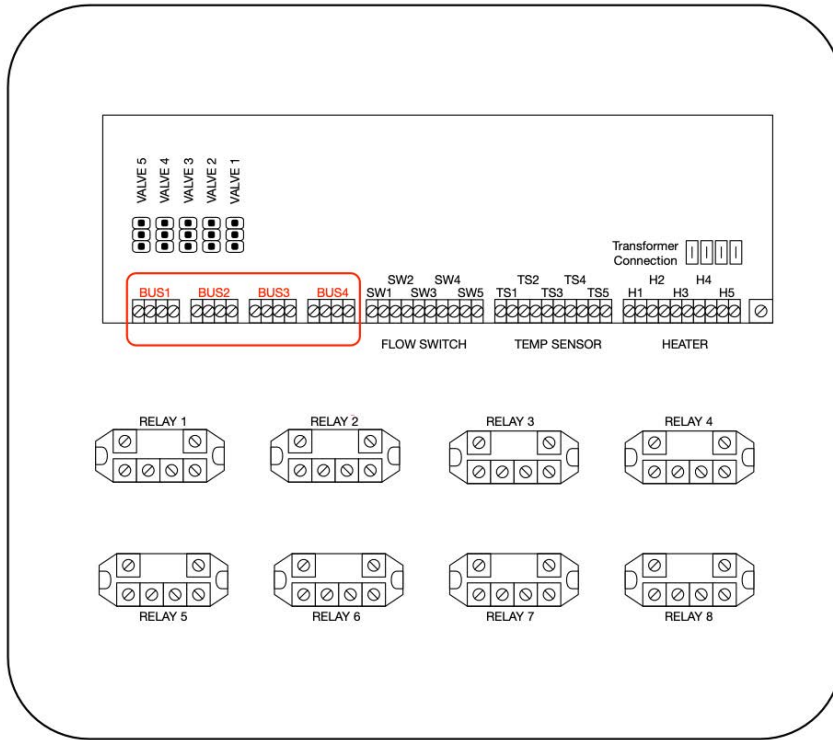


Figure 32.
MasterTemp Heater (Exhaust Side)

3. Use a 3 or more conductor 18-20 gauge cable to connect to the RS485 port on the heater control panel circuit board. Be sure to route the cable away from the exhaust.



4. Connect the the cable to one of the “Bus” ports on the attendant.



Controlling the Pentair MasterTemp heater requires connecting the yellow, green and black wires to the D+, D- and GND terminals respectively on one of the communication bus connectors of The Attendant labeled BUS1 through BUS4.

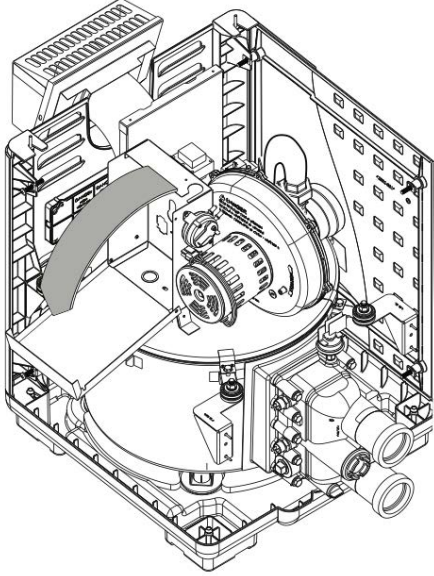
Pentair MasterTemp	The Attendant
Yellow (DT+)	D+
Green (DT-)	D-
Black (GND)	GND

Note:

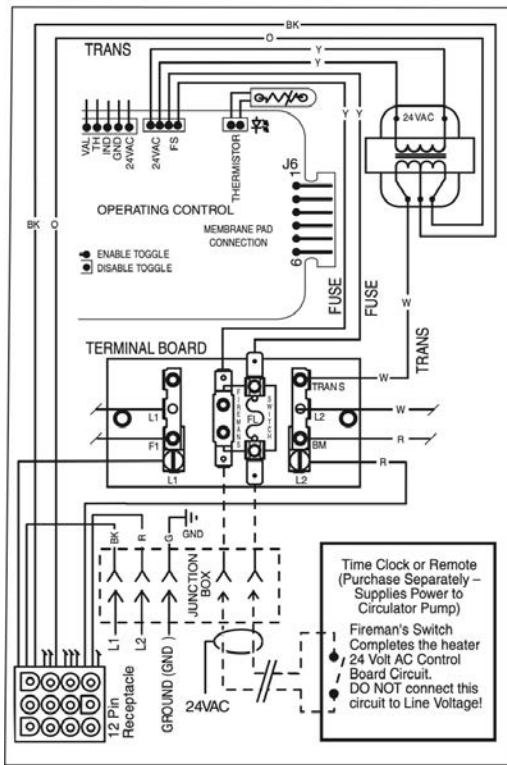
- The MasterTemp heater defaults to an address of 1. This address can be changed by using the local LCD panel on the heater.
- Once the heater is controlled via The Attendant the local heater LCD will display “RS485 Control”

Dry Contact / Fireman Switch Connection

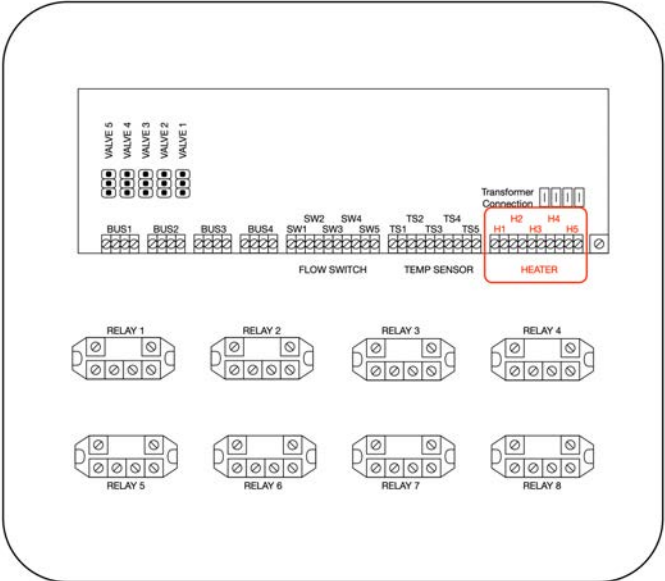
1. Turn off power to the unit
2. Open the control box cover



3. Remove the factory installed jumper from the Fireman's Switch terminals
4. Connect 18awg wire to Fireman's Switch terminals



- 5. Connect both conductors of the wire to one of the heater ports on The Attendant



Pentair Ultratemp Heat Pump

Pentair UltraTemp heat pumps can be controlled using legacy fireman switch/dry contact connections or digital Serial RS485 connections.

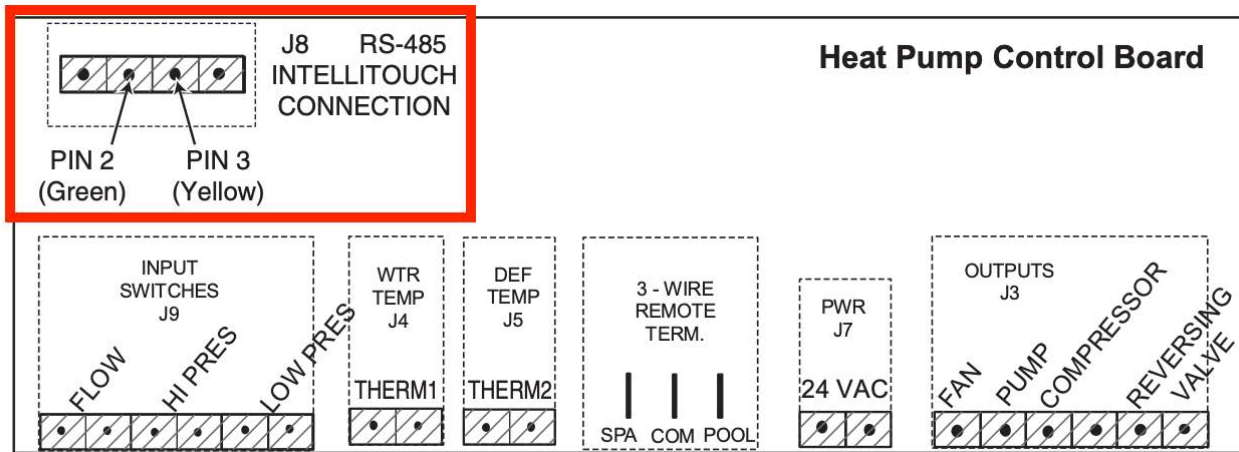
Dry Contact/Fireman Switch connections allow The Attendant to control the Heat Pump on/off state to manage a desired water temperature setpoint

Serial RS-485 connections allow The Attendant to control the heater on/off state to manage a desired water temperature setpoint, select device modes (Heat Only, Cool Only, Auto) AND read/report any error codes reported by the unit

Poolside Tech recommends using Serial RS-485 connections whenever possible, however it is not required.

Serial RS-485 Connection (Recommended)

Controlling the Pentair Ultratemp heat pump requires connecting the green and yellow wires from J8 pin 2 and J8 pin 3 to the D+ and D-terminals respectively on one of the communication bus connectors of The Attendant labeled BUS1 through BUS4.



Pentair MasterTemp	The Attendant
Yellow (J8 pin 3)	D+
Green (J8 pin 2)	D-

1. Turn off the power to both The Attendant and the UltraTemp® Heat Pump.

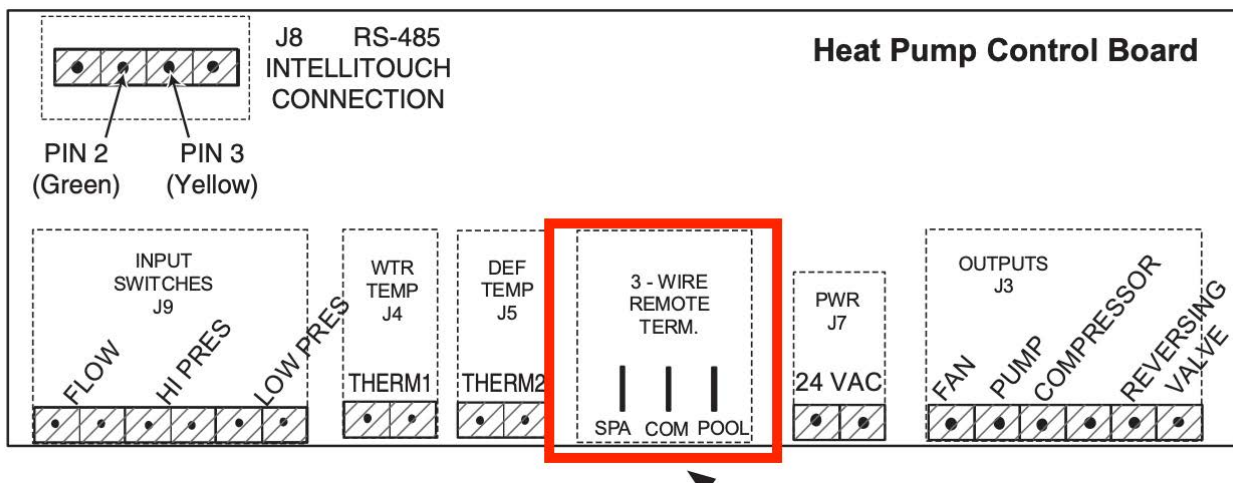
2. Remove the front left panel of the heat pump cabinet, (you do not need to remove the star-head screw at the top left corner).
3. Remove the electrical service panel to the heat pump. Remove the 4 bezel retaining screws from above the electrical compartment and rotate the bezel downward. This will allow you to access the Remote terminals on the back of the heat pump control board for the remote control installation.
4. Run the wires from The Attendant into the upper electrical compartment.
5. Rotate the bezel back upwards into position and reinstall the 4 retaining screws.
6. Replace the electrical service panel.
7. Replace the front left panel. 9. Restore power to the heat pump and The Attendant.

Once the wiring is completed you must put the heat pump into remote mode.

- Press the MENU SELECT button to scroll to the Remote Mode screen.
- Toggle the selection by pressing one of the arrows until the screen displays "RS-485."
- Once the heat pump has been correctly configured, a "heartbeat" indicator will appear on the main screen each time a message is received from the automation system.

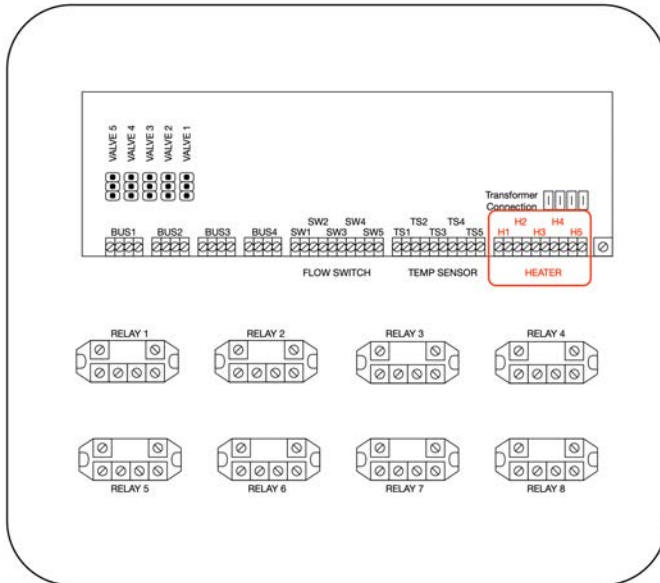
Dry Contact / Fireman Switch Connection

Dry contact connection requires you to connect the spade connectors **SPA** and **COM** on the heat pump control board to an open heater port on The Attendant. Follow the process below



8. Turn off the power to both The Attendant and the heat pump.
9. Remove the front left panel of the heat pump cabinet, (you do not need to remove the star-head screw at the top left corner).

10. Remove the electrical service panel to the heat pump. Remove the 4 bezel retaining screws from above the electrical compartment and rotate the bezel downward. This will allow you to access the Remote terminals on the back of the heat pump control board for the remote control installation.
11. Run the wires from The Attendant into the upper electrical compartment.
12. Connect wires to the heat pump remote control terminals using ¼ in. “Spade” connectors as shown in the image below.
13. Connect the other end of the remote control wires to an open Heater port on The Attendant Panel



14. Rotate the bezel back upwards into position and reinstall the 4 retaining screws.
15. Replace the electrical service panel.
16. Replace the front left panel.
17. Connect the connect the wires
18. Restore power to the heat pump and The Attendant

Once the wiring is completed you must put the heat pump into relay mode.

- Press the MENU SELECT button to scroll to the Remote Mode screen.
- Toggle the selection by pressing one of the arrows until the screen displays “Relay.”

Pentair Ultratemp ETi Hybrid Heater/Heat Pump

Pentair UltraTemp ETi Hybrid heat pumps can be controlled using legacy fireman switch/dry contact connections or digital Serial RS485 connections.

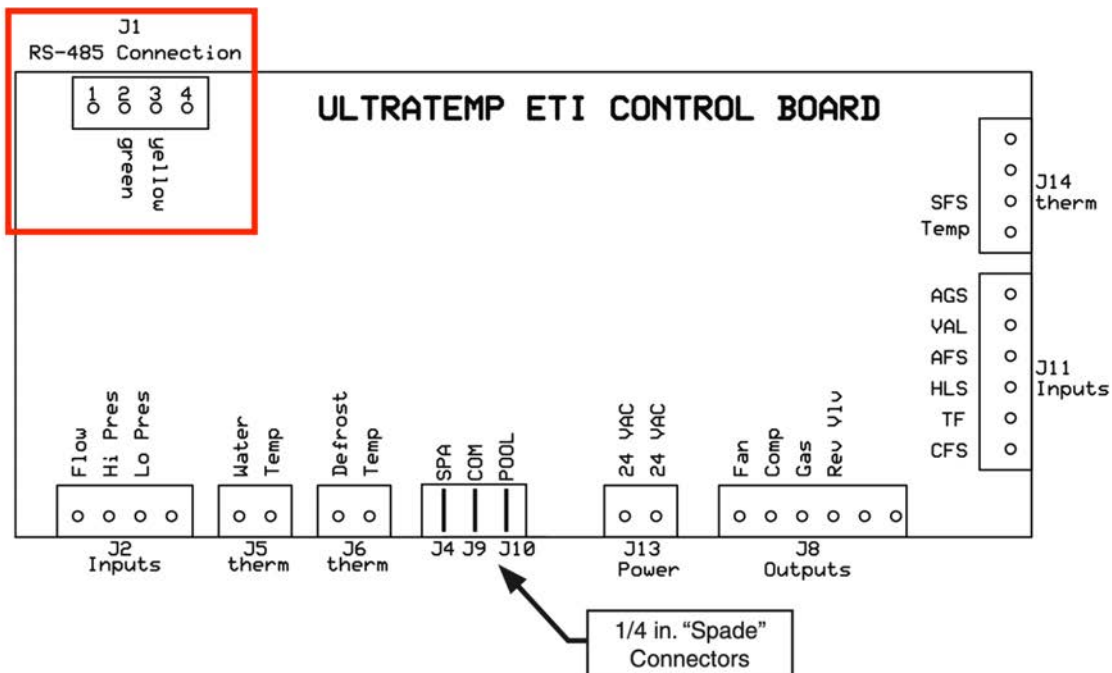
Dry Contact/Fireman Switch connections allow The Attendant to control the Heat Pump on/off state to manage a desired water temperature setpoint

Serial RS-485 connections allow The Attendant to control the hybrid heater on/off state to manage a desired water temperature setpoint, select device modes (Gas Heat, Electric Heat, Electric Cool, Both) AND read/report any error codes reported by the unit

Poolside Tech recommends using Serial RS-485 connections whenever possible, however it is not required.

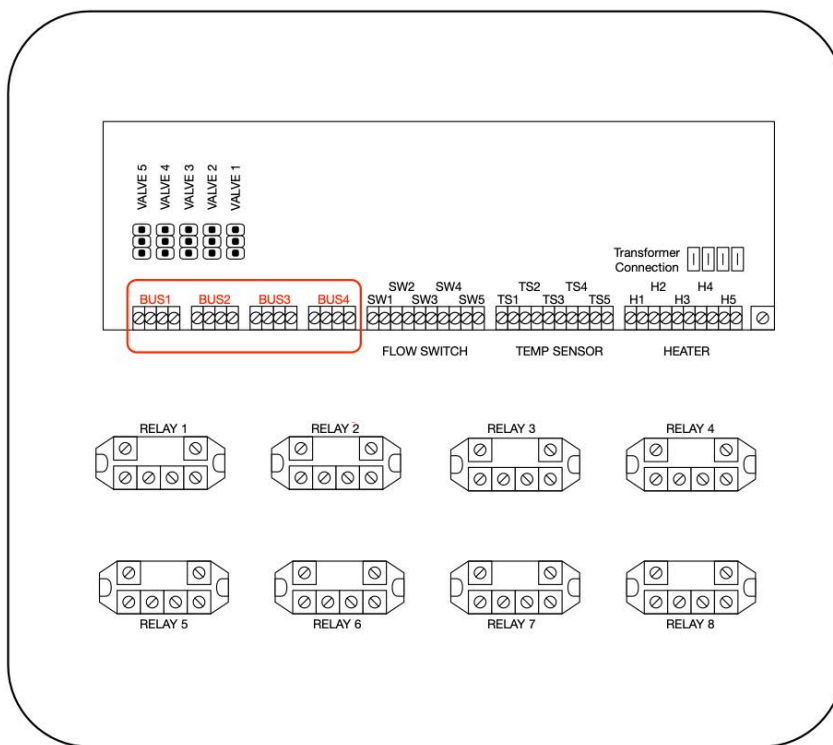
Serial RS-485 Connection (Recommended)

Controlling the Pentair Ultratemp Hybrid heater requires connecting the green and yellow wires from J1 pin 2 and J1 pin 3 to the D+ and D-terminals respectively on one of the communication bus connectors of The Attendant labeled BUS1 through BUS4.



Pentair ETi	MasterTemp	The Attendant
Yellow (J1 pin 3)		D+
Green (J1 pin 2)		D-

1. Turn off the power to both The Attendant and the UltraTemp® Heat Pump.
2. Connect a two conductor 22AWG cable to pins 2 and 3 on the J1 connector
3. Connect the wires to an open Bus port on The Attendant. Be sure to connect per the table above.



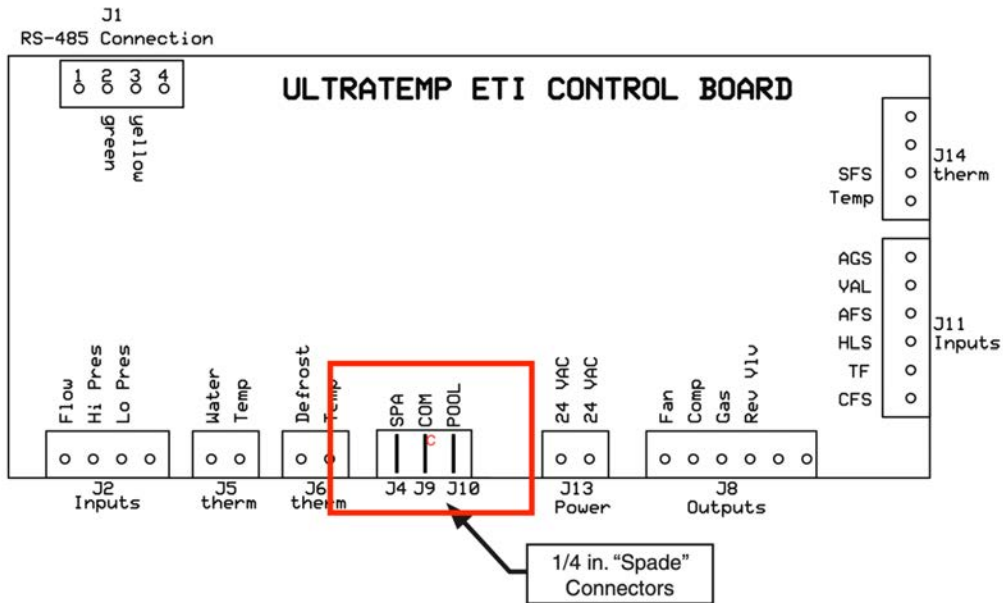
4. Restore power to the heat pump and The Attendant

Once the wiring is completed you must put the heat pump into remote mode.

- Press the MENU SELECT button to scroll to the Remote Mode screen.
- Toggle the selection by pressing one of the arrows until the screen displays "RS-485."
- Once the heat pump has been correctly configured, a "heartbeat" indicator will appear on the main screen each time a message is received from the automation system.

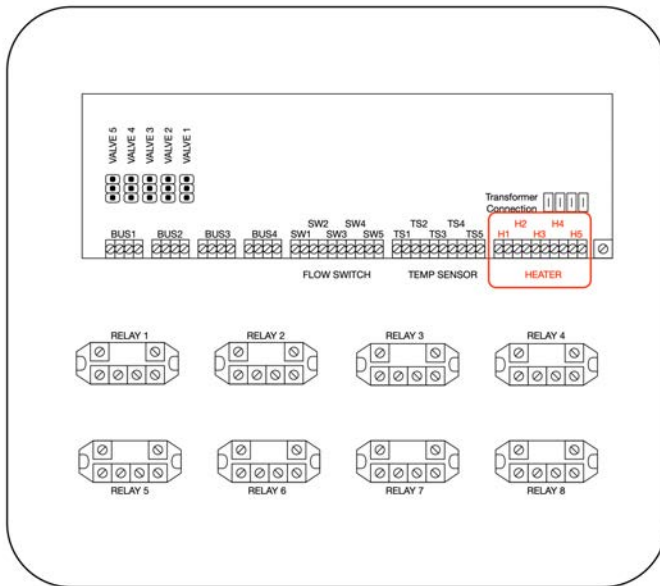
Dry Contact / Fireman Switch Connection

Dry contact connection requires you to connect the spade connectors **SPA** and **COM** on the heat pump control board to an open heater port on The Attendant. Follow the process below



1. Turn off the power to both The Attendant and the hybrid heater pump.
2. Run the wires from The Attendant to the electrical compartment.
3. Connect wires to the hybrid heater remote control terminals using 1/4 in. "Spade" connectors as shown in the image below.

4. Connect the other end of the remote control wires to an open Heater port on The Attendant Panel



5. Restore power to the hybrid heater and The Attendant

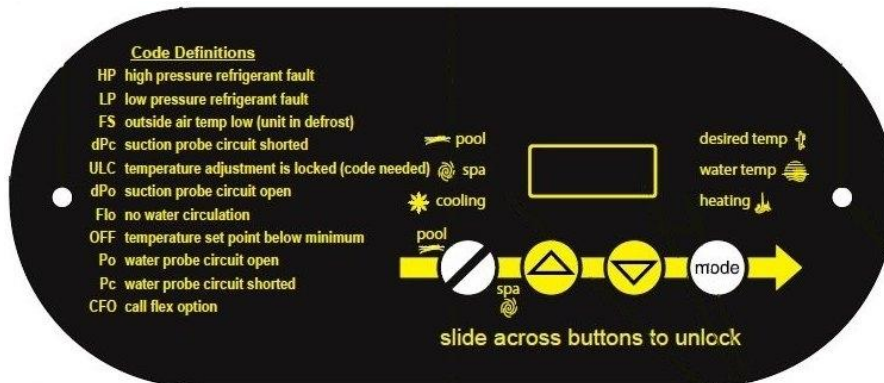
Once the wiring is completed you must put the heat pump into relay mode.

- Press the MENU SELECT button to scroll to the Remote Mode screen.
- Toggle the selection by pressing one of the arrows until the screen displays "Relay."

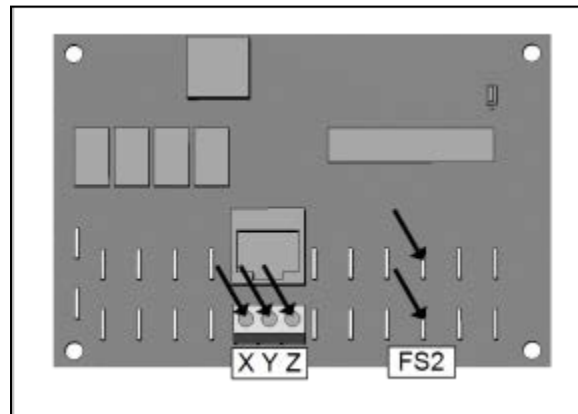
AquaCal Heaters, Chillers, and Heat Pumps with a Four Button Display

AquaCal heater/chiller devices that have **four-button displays can only be remotely controlled using legacy fireman switch/dry contact connections.**

The instructions below apply to Heat Pumps with a display that is pictured below:



Connecting an Aquacal heater/chiller device requires connecting 2 wires from the **Y and Z** connections on the heater to an available **Heater** port on The Attendant (H1 to H5).



It doesn't matter which wire is connected to line or load on The Attendant. Ensure the wire you use is 16-gauge, 2-conductor low voltage or that you are using the wire provided in the remote connection kit from AquaCal.

Once the wiring is completed you must put the heat pump into remote mode.

- Press "Up" and "Down" buttons simultaneously until **CFI** appears.
- Press "Pool / Spa" button until **LOC** is displayed.
- Press "Up" or "Down" to passcode. Default is "17".
- Press "Pool / Spa" button once.

- Press the "Pool / Spa" button until **JAO** is displayed.
- Press "Up" or "Down" button
- Select **"2" - two-wire**

Please note - If equipped, the heat pump's cooling function will be disabled when connecting to The Attendant. This is a function of the heat pump, not an Attendant limitation. *Display upgrades are available directly from AquaCal that provide RS-485 communication capability which will allow you to operate both heat and cool modes of combo heat pump units.*

If cooling functions are needed, the heat pump must be temporarily reprogrammed for local control, set to COO mode, and then returned to remote mode.

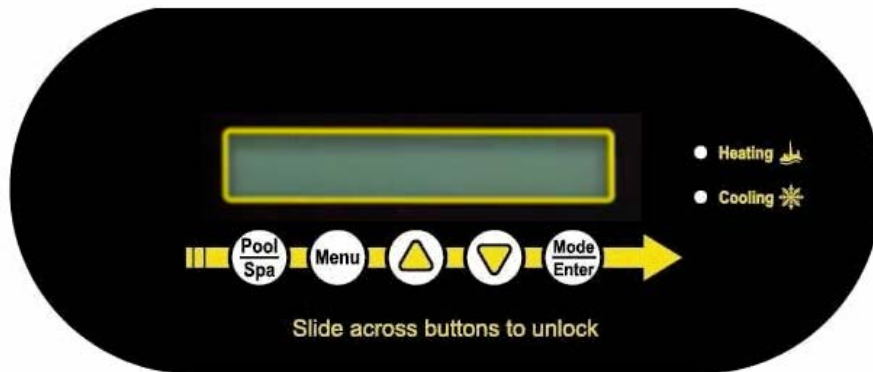
- Set the heat pump to operate with external control temporarily set to "0 none" using the procedure listed above.
- Using the heat pump display, set the mode to COO mode.
- Reprogram the pump to work in remote mode.

It is OK to leave external controller wires in place while the heat pump is set for local control.

AquaCal Heaters, Chillers, and Heat Pumps with a Five Button Display

AquaCal heater/chiller devices with five-button displays can be controlled using either legacy fireman switch/dry contact connections or digital serial RS485 connections.

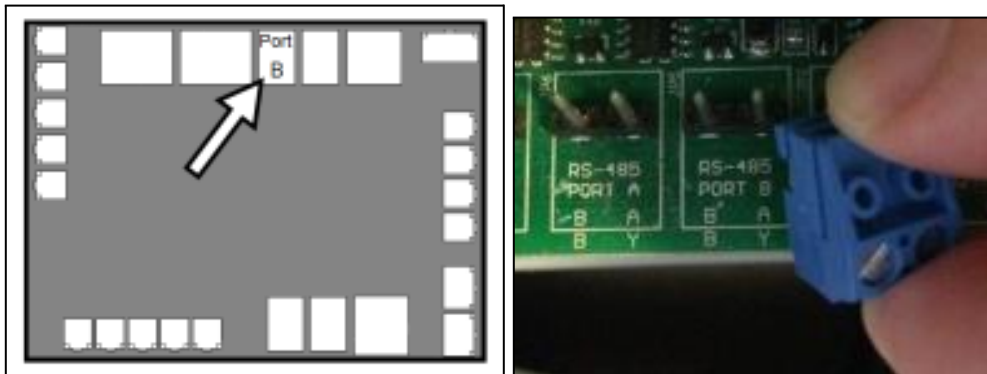
The instructions below apply to Heat Pumps with a display that is pictured below:



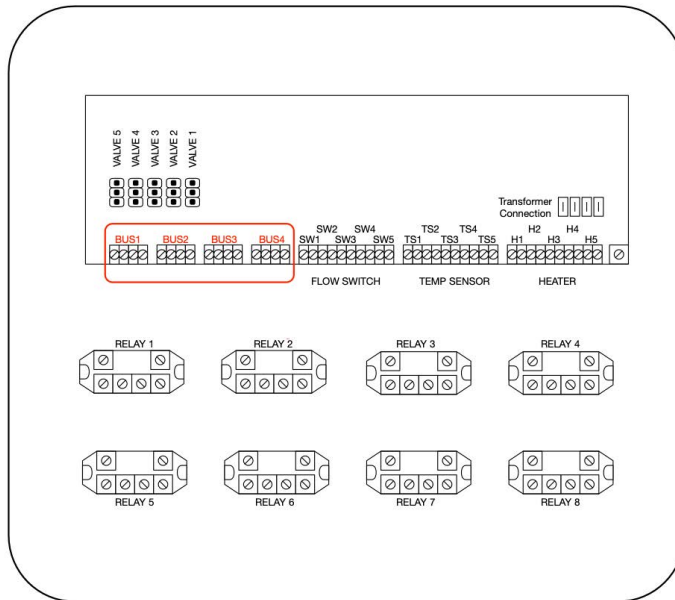
Serial RS-485 Connection (Recommended)

The recommended connection mode for AquaCal 5-button devices utilizes serial RS-485 wiring. This connection enables The Attendant to switch between heating and cooling modes on heat pumps equipped with this capability. It also enables the ability to read and surface service codes sent by the device to the Poolside mobile app.

1. Turn off power to the heat pump and The Attendant
2. Remove electrical access panel on the heat pump
3. Route 22 gauge 2 conductor wire from The Attendant enclosure into the low voltage compartment of the heat pump.
4. Connect wires to “**Port B**” (sometimes labeled **Bus2**) of the control board in the heat pump



5. Connect the other end of the wire to a Bus port on The Attendant



Aquacal	The Attendant
Pin A (or Y)	D+
Pin B (or Z)	D-

Once the wiring is completed you must put the device into remote mode. This procedure varies based on the firmware version of the AquaCal hardware. **There are 2 versions: 1.xxx and 2.xxx.**

The quickest way to check is to press the "MENU" button and scroll up/down to see all available options. **If you see a "SHORTCUTS" option, the firmware version is 2.xxx.**

Firmware 2.xxx - Enabling Remote Mode

- Wake up the unit by swiping across the keypad
- Press Menu
- Use arrows to navigate to System and press Enter
- Use arrows to navigate to Advanced and press Enter
- Use arrows to navigate to External Control and press Enter
- Use arrows to pick **Smart** External Control Mode and press Enter
- Use arrows to set the Local Address to **00**. Press enter when done.
 - You will need to enter **"1"** as the bus identifier in The Attendant configuration
- Confirm OK to clear existing setups.

The heat pump should restart when the procedure is complete. You should see the following screen:



Firmware 1.xxx - Enabling Remote Mode

- Press "Up" and "Down" buttons simultaneously until **CFI** appears.
- Press "Pool / Spa" button until **LOC** is displayed.
- Press "Up" or "Down" to passcode. Default is "17".
- Press "Pool / Spa" button once.
- Press the "Pool / Spa" button until **JAO** is displayed.
- Press "Up" or "Down" button
- Select **"2" - two-wire**

Poolside Mobile App Device Configuration

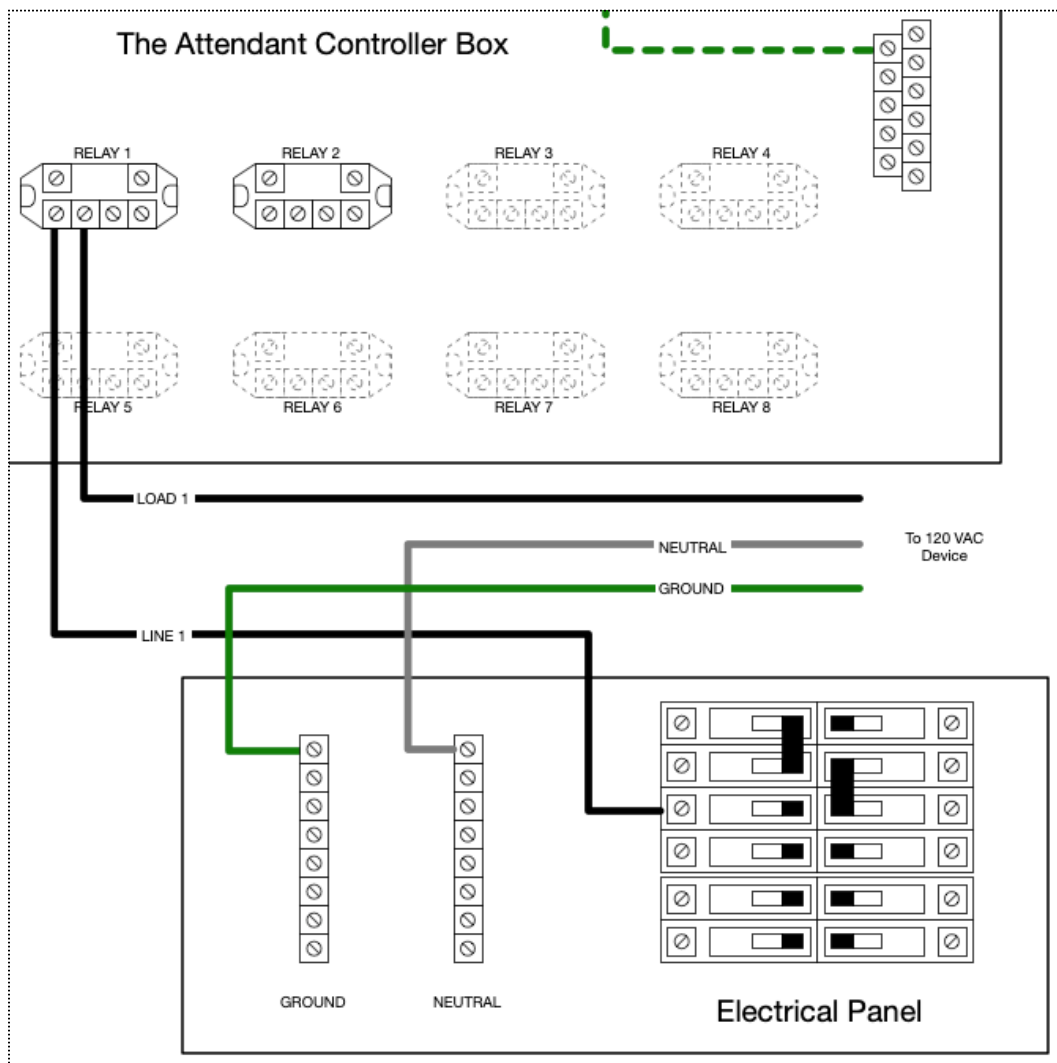
- Add a new heat pump device
- Select Jandy and model JE2000T/JE (or Pentair UltraTemp 120 H/C)
- Check the appropriate boxes for 'Supports Heating' and 'Supports Cooling'
- Set the Bus Identifier to 1

Dry Contact / Fireman Switch Connection

To connect five-button AquaCal heater/chiller devices using the legacy fireman switch method, follow the wiring and connection instructions for [Four Button Displays](#).

Air Blowers

Pool and spa air blowers are used to not only increase the air supply to your jets, but also for other water features like bubblers. The Attendant supports virtually all models when connected using high voltage relays.



Pool and Landscape Lighting

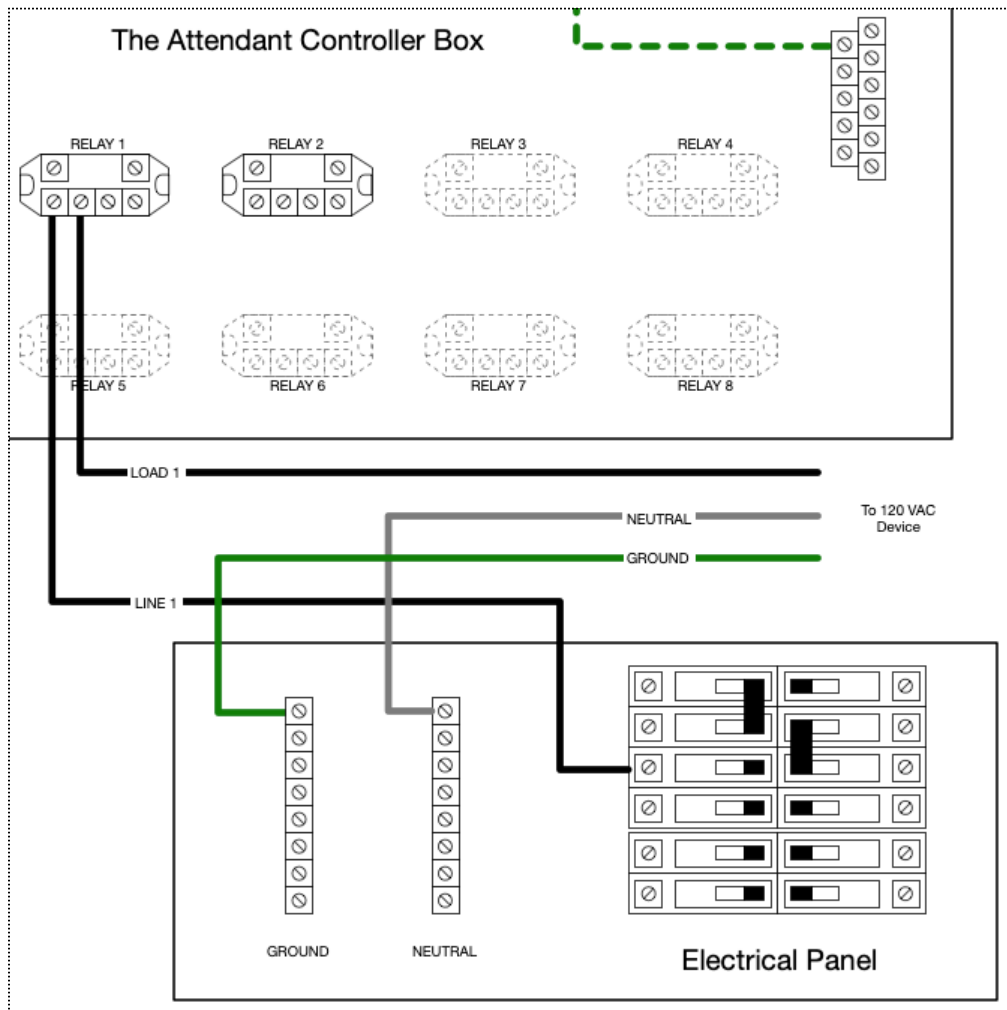
The Attendant is capable of controlling pool and landscape lighting via the **high voltage relays** located on the controller **or** professional grade **Digital Multiplex** lighting (a.k.a. DMX) using one or more **serial (BUS1-4)** communication ports.

High Voltage Pool and Landscape Lighting

This type of light is most commonly installed in pools and spas around the world. In this scenario, wiring is the same as connecting a 120v single speed pump to the system - by utilizing a high voltage relay to power the light and change its settings.

If an existing manual on/off switch will remain after connecting to The Attendant, please ensure it is left in the ON position so that it can be controlled.

Please refer to the following diagram as well as the manufacturer's installation instructions:



DMX Lights

When using DMX lights, The Attendant gives you complete access to that light's color palette.

DMX lights are physically connected to The Attendant using one of the communication bus connectors labeled BUS1 through BUS4. Connect the wires from the light (**data+**, **data-**, and **ground**) to the **D+**, **D-** and **GND** terminals on the BUS1-4 port selected.

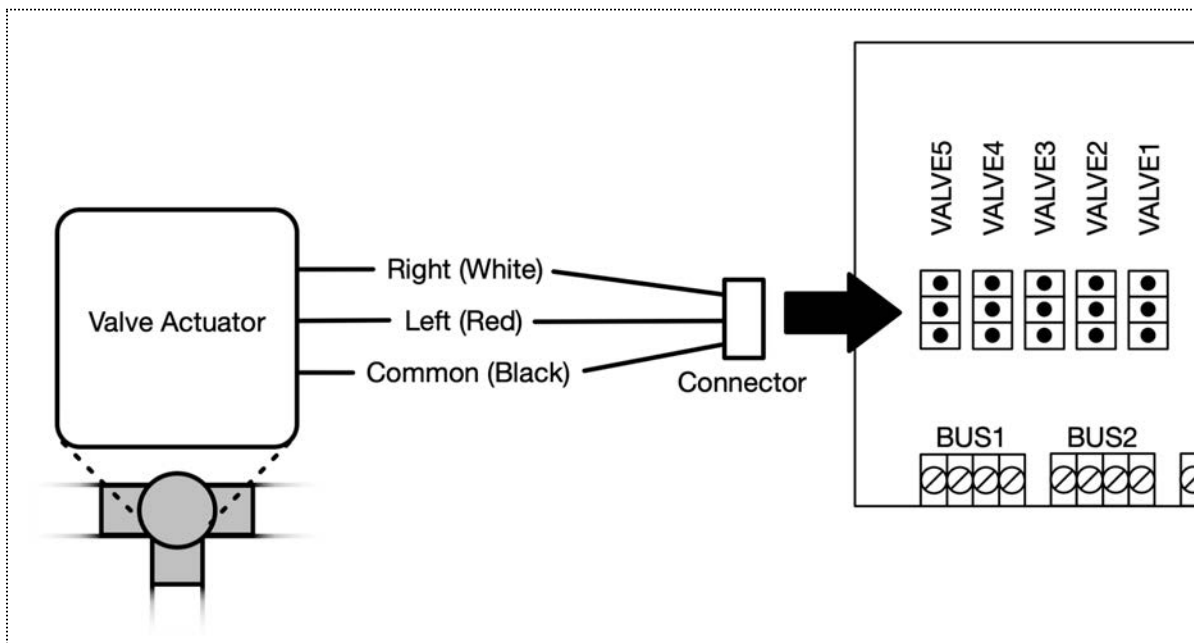
In order to control the lights, you will configure them using the Poolside Mobile App first by setting up a "Generic" light, using "DMX" as the model.

Actuators

The Attendant is capable of controlling up to five automatic 24 VAC valve actuators and is compatible with valve actuators manufactured by Hayward, Pentair, Jandy and Intermatic.

If your actuator was not made by one listed above, it's still likely that The Attendant will work with it. However, please be sure to refer to our [website](#) for the latest up-to-date list of verified tested equipment before connecting!

Refer to the following wiring diagram for connection:

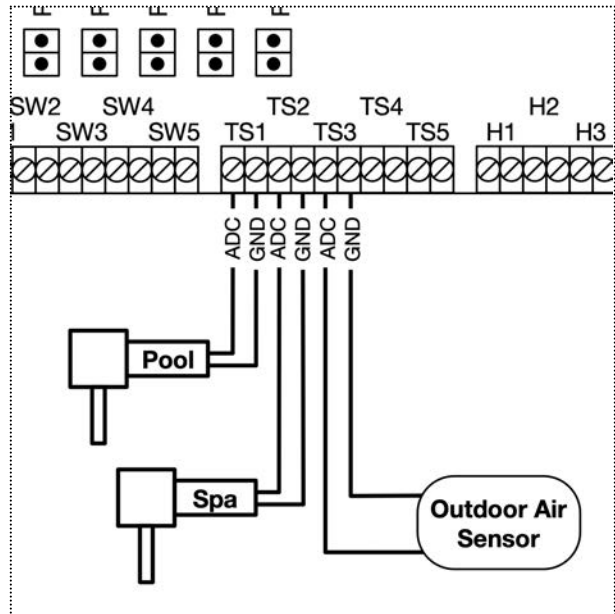


IMPORTANT: The Attendant's energy-conscious logic will normally keep actuators powered down when operating in normal mode. Only actuators configured as a Pentair Intellivalve will have consistent power applied in normal mode. All actuators, no matter the brand, will be constantly powered only when in Installer Mode.

Temperature Sensors (Thermistors)

The Attendant is capable of reading 10k-ohm thermistor sensors and provides five separate powered contacts for attaching these devices. They can be connected via the inputs marked **TS1 through TS5**. It should be noted that temperature sensors do not have a polarity and the red and black wires are interchangeable.

The Attendant temperature sensor contacts **provide low voltage (5v)** electricity to devices. Please ensure any equipment you connect to these terminals are ready to accept this voltage.

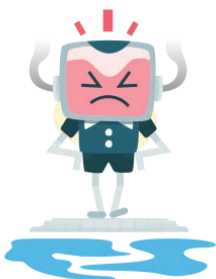


Water Temperature Sensor

This sensor is used to measure the temperature of a body of water. It should be installed in the filtration plumbing **after the filter but before a heater or chiller**.

If you have both a spa and a pool then ideally one sensor would be installed in each suction line to ensure an accurate reading for each. In the scenario where you have a shared filter and heater you would install these sensors into the suction line of each body of water before the filter.

Installing thermistors into the system plumbing will require a drill bit or small hole saw that is the size of the thermistor sensor diameter (which is typically 3/8" in size). Drill a hole into one side of the pipe, insert the thermistor and secure it using the supplied gasket and clamp.



WARNING

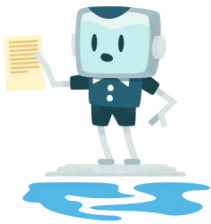
Be careful when you are drilling into the pool plumbing pipe that you don't poke a hole out the other side!

Ambient (Air) Temperature Sensor

The ambient temperature sensor should be installed as close to The Attendant but **not in direct sunlight or within 6 feet of a heat source** (heater vents, exhaust fans, etc.) The Attendant uses this sensor primarily for the **Freeze Protection** of your system.

Solar Temperature Sensor

For **solar heating installations**, mount the sensor **in direct sunlight** preferably next to the solar panels.



NOTE

It is best practice to install any temperature sensors in the suction lines so you can get an accurate reading on the temperature of the water that is being monitored. The exception to this would be in water returning from a solar heating system.

Flow Switches

The Attendant is capable of capturing the input from up to five separate water flow switches. These devices will be connected to the powered contacts labeled **SW1 to SW5**.

For specific instructions on installing a water flow switch into your plumbing, please refer to the device manufacturer instructions.

The Attendant uses flow switches to determine if the pumps in the system are working (i.e. primed and running). This gives The Attendant the unique ability to determine if the water flow has degraded over time and by how much. Reduced or stopped water flow can indicate that a blockage may exist in skimmer baskets or filters due to debris, leaves, etc. and that it's time to clean them. It could also mean that something more serious may be happening!

We recommend that you have a minimum of one flow switch per pump in the system, preferably installed somewhere near the pump's supply line.



WARNING

Entrapment Hazard

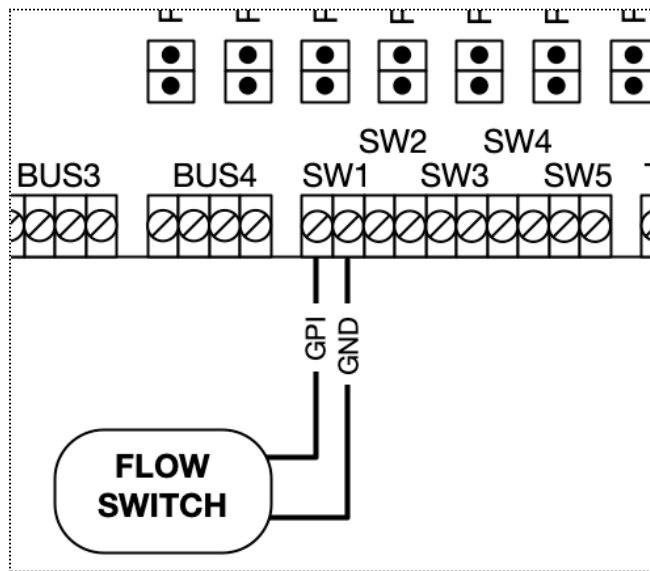
Please ensure that pool cover is not controlled by The Attendant as this may cause a swimmer to become trapped in the pool and drown.



NOTE

If you are looking to capture pool cover open or closed status you can use one of the flow switch contacts to do that.

For wiring directions see the following diagram:



Spa Side Remotes

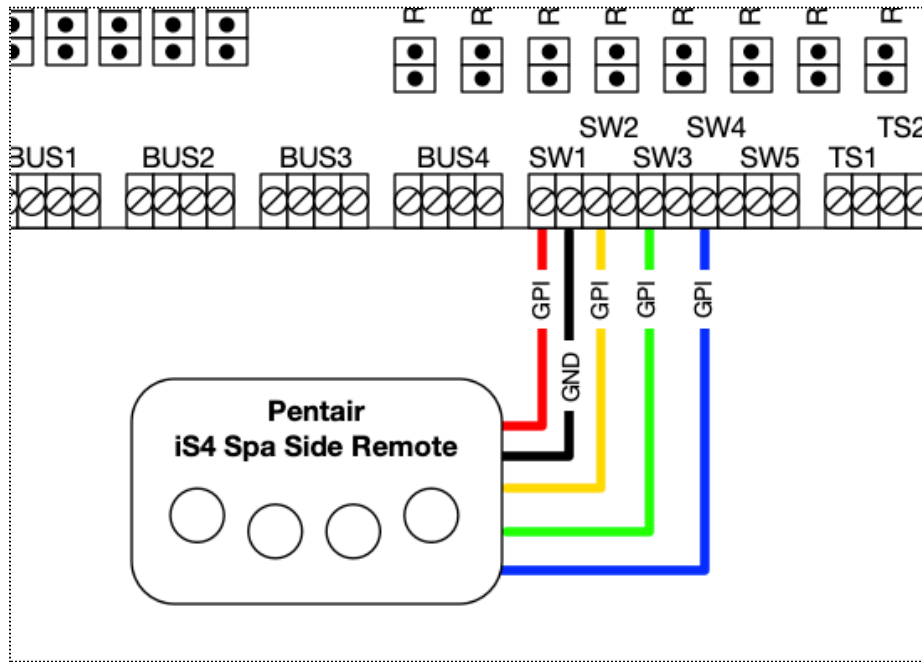
Spa side remotes are a common feature that many people enjoy in their spa. The Attendant is capable of connecting to any four button remote. Common remotes are listed below with their associated wiring diagrams.

Pentair iS4 Remote

When connected to the Attendant, a Pentair iS4 Remote can be used to control pool and spa features such as heating, lighting, water features and more.

Connect the Pentair IS4 Remote to the Attendant flow switch ports as shown:

Pentair IS4 Remote to Attendant Connection			
<i>Attendant Port</i>		<i>Wire Color</i>	<i>Purpose</i>
SW1	GPI	Red	Button 1
	GND	Black	Ground
SW2	GPI	Yellow	Button 2
	GND	–	
SW3	GPI	Green	Button 3
	GND	–	
SW4	GPI	Blue	Button 4
	GND	–	



NOTE



The orange (LMP) wire on the iS4 remote is not used

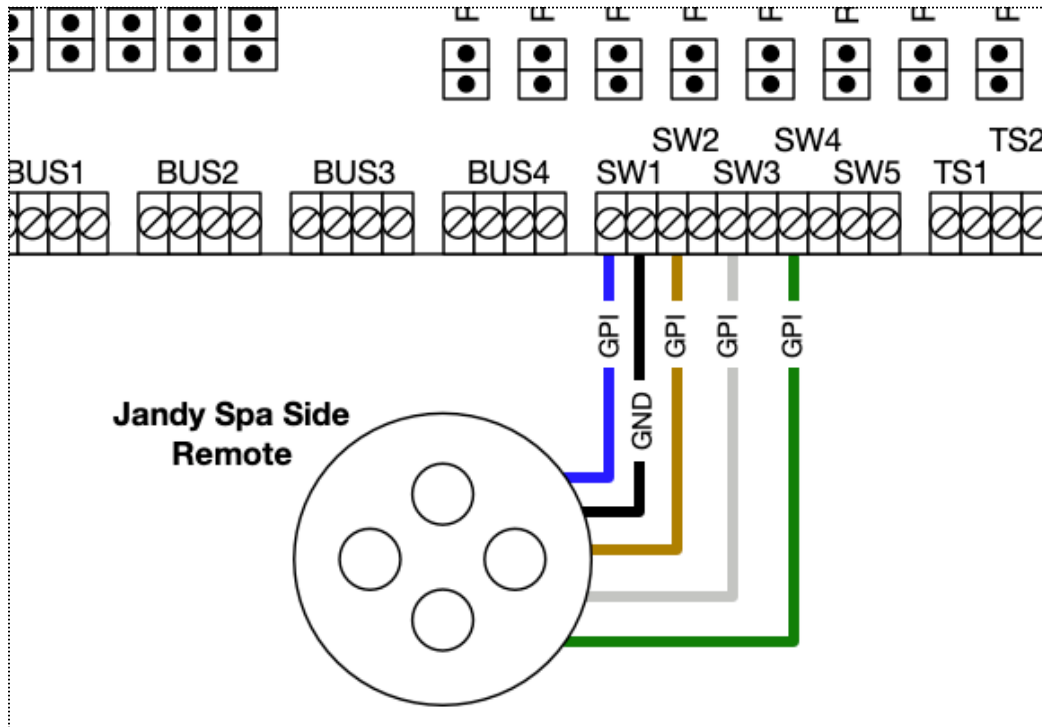
After you have wired the remote as shown, use the Attendant mobile app in Installer Mode to add a 'Button' type device for each button. From there you can program the button using the Map Push Buttons option on the maintenance menu.

Jandy Spa Side Remote

When connected to the Attendant, a Jandy Spa Side Remote can be used to control pool and spa features such as heating, lighting, water features and more.

Connect the Jandy Spa Side Remote to the Attendant flow switch ports as shown:

Jandy Spa Side Remote to Attendant Connection			
Attendant Port		Wire Color	Purpose
SW1	GPI	Blue	Button 1
	GND	Black	Ground
SW2	GPI	Brown	Button 2
	GND	-	
SW3	GPI	White	Button 3
	GND	-	
SW4	GPI	Green	Button 4
	GND	-	





NOTE

The red wire on the Jandy Spa Side remote is not used

After you have wired the remote as shown, use the Attendant mobile app in Installer Mode to add a 'Button' type device for each button. From there you can program the button using the Map Push Buttons option on the maintenance menu.

Pool/Spa Cover Sensors

The Attendant is capable of capturing the input from up to five separate pool or spa cover switches. These devices will be connected to the powered contacts labeled **SW1 to SW5**.

Pool Chemistry Management

If your system is equipped with pool chemistry capabilities and you have the appropriate equipment, The Attendant will be able to read the water's current pH and/or ORP readings. The Attendant can use this information to dose the appropriate amount of chemicals in your pool to bring your chemistry levels back to your desired comfort settings.

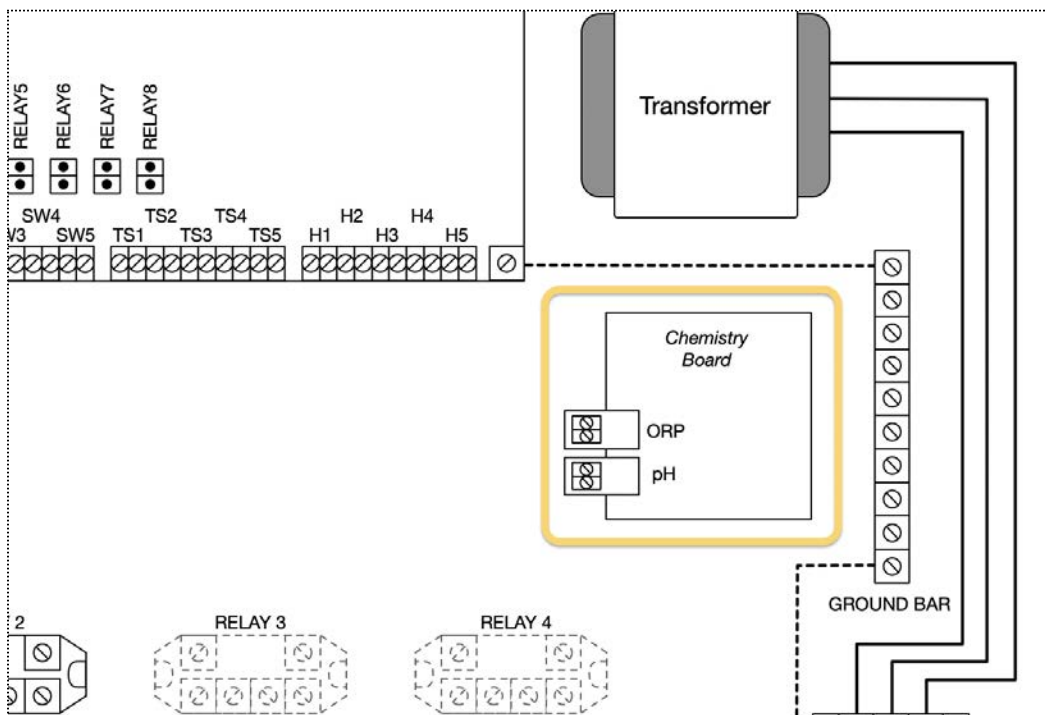
Chemistry management utilizing The Attendant consists of three core components:

1. One or More Chemistry Boards
2. pH and ORP Water Sensors (or probes)
3. Chemical Dosing Equipment and Configuration

The Chemistry Boards

The Chemistry Boards are the connection between the probes and The Attendant main board. One or two of these are located underneath the bottom cover on the right side of the controller box just under the power supply.

General location of where chemistry boards would be installed in relation to transformer and main board:



Installation of the Primary Chemistry Board

This chapter should be followed when installing an initial chemistry board into an Attendant that has no other ones installed.

The Primary Chemistry board is also known as the “Bottom Board” in the mobile app.

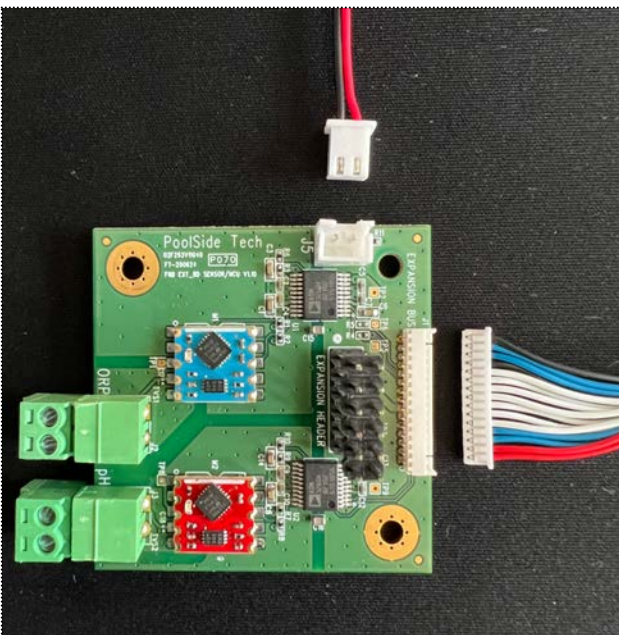
Prior to installation, ensure that you have the following available:

- The Chemistry Board itself
- 2 M3 mounting screws (included with the kit)
- 2 communication wires to connect the Chemistry Board to the main board of The Attendant (included with the kit)
- #2 Phillips screwdriver

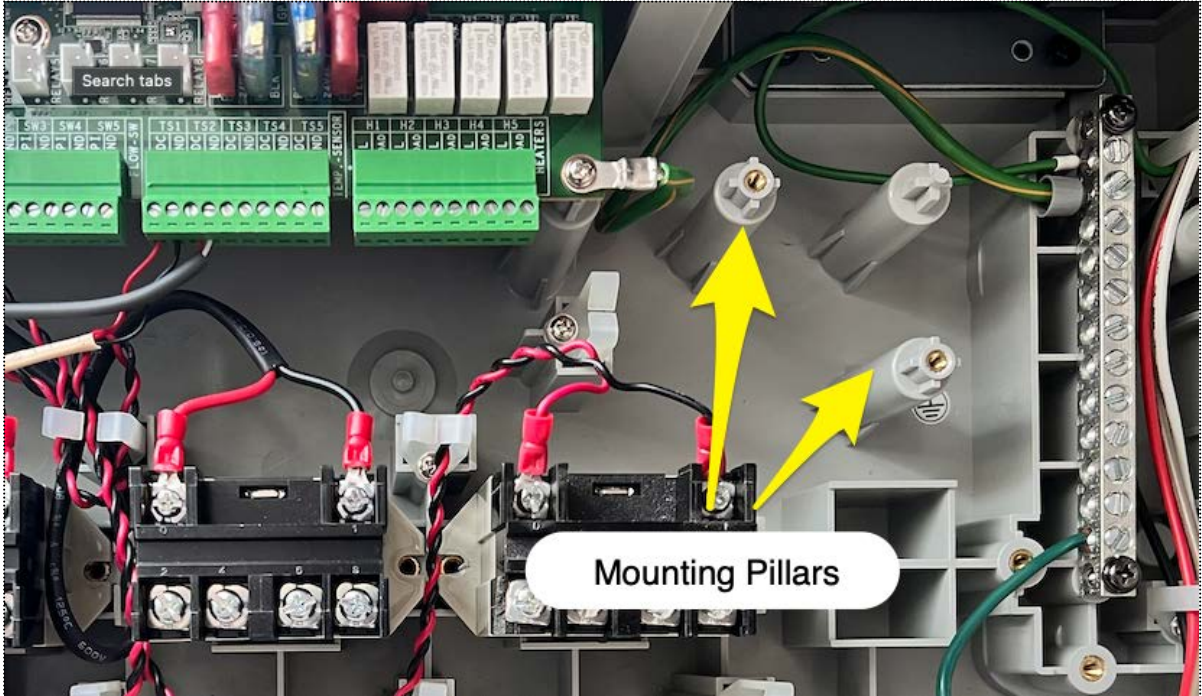
1. **SHUT OFF ALL POWER** to The Attendant.
2. Prior to mounting the Chemistry Board, carefully **install the two communication cables provided** with the Chemistry Board kit into the connectors as shown below.

Be sure to **discharge** any static electricity from your body before handling the board and wires. You can do this by using an anti-static wrist strap, or by touching a grounded metal enclosure using something like a key.

The 2-wire cable is placed into the **J5 connector**, and the wider, 15-wire cable is placed into the **Expansion Bus connector**.



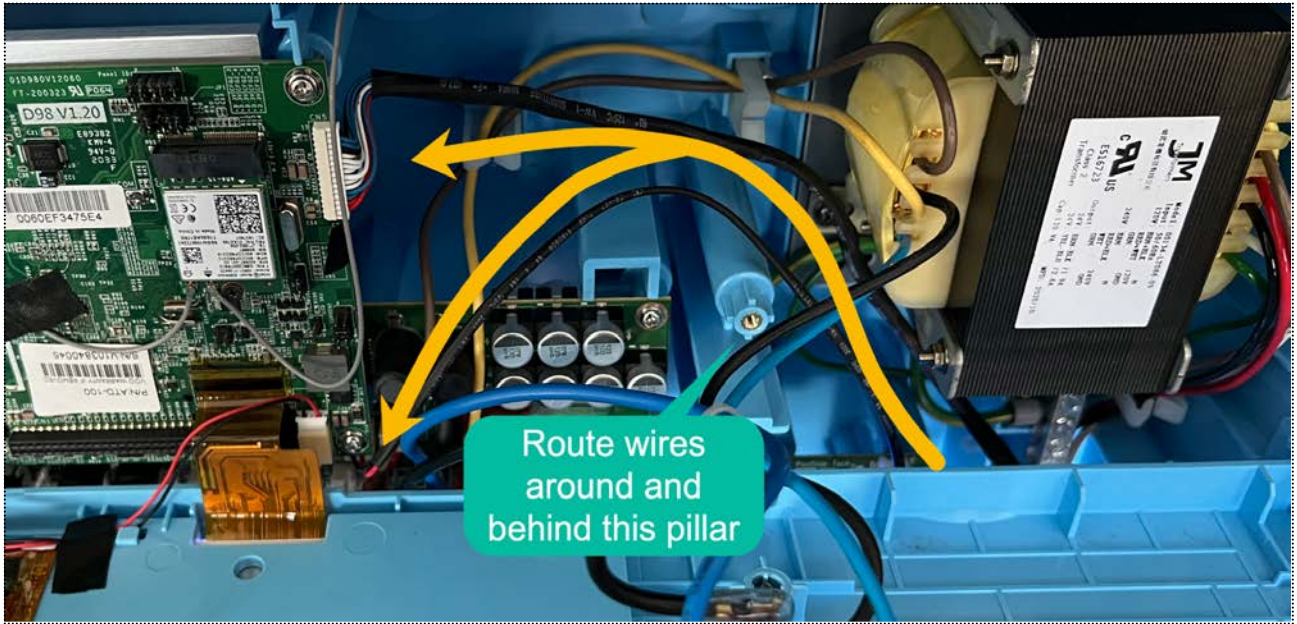
3. On The Attendant, **loosen the mounting screws on the bottom cover and remove the cover.**
4. Locate the Chemistry Board mounting pillars on the top right side of the compartment. See image for placement.



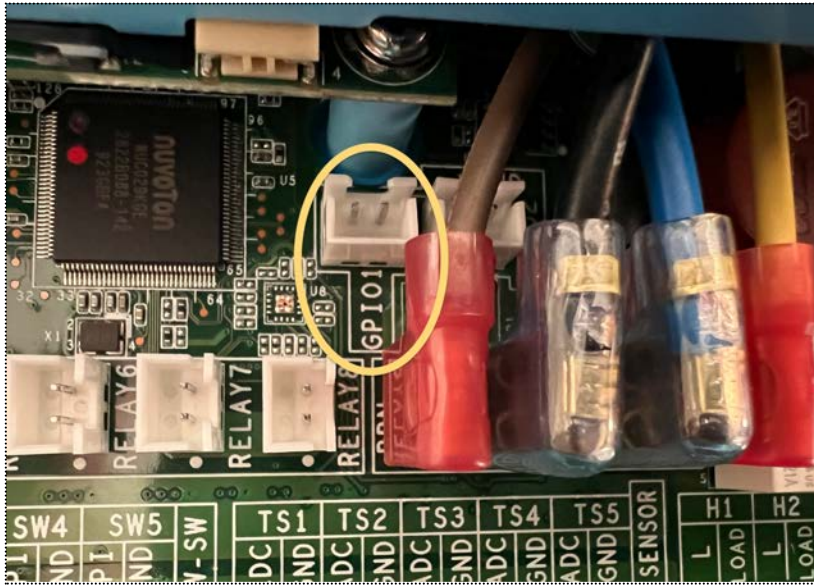
5. Install the Chemistry Board by **gently** placing the board over the area and **holding it in place while inserting and tightening the mounting screws** (included). Be careful **not to over-tighten** the screws!

Once the Chemistry Board is securely fastened to the mounting pillars, you can take the next steps of connecting the communication wires to the main board.

6. **Loosen** the mounting screws on the **top cover** and lower it down from the top. **Note: the cover swings downward on a hinge.** The top cover should not be removed completely.
7. Route both of the wires from the Chemistry Board under the top cover and between the center pillar and the transformer. See the following image on the next page.

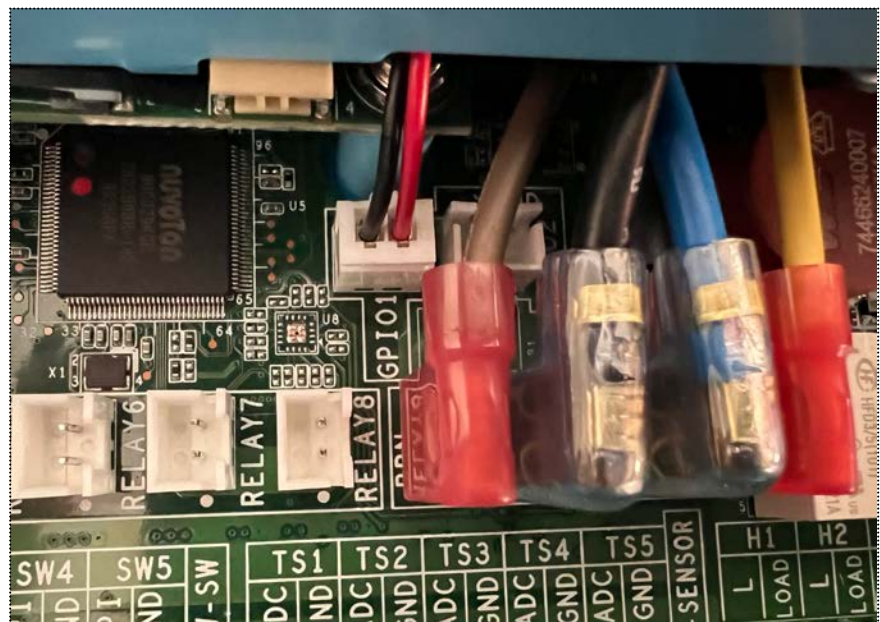


8. Attach the 15-wire cable to the **CN5/Expansion connector** on the upper-right side of the main board.

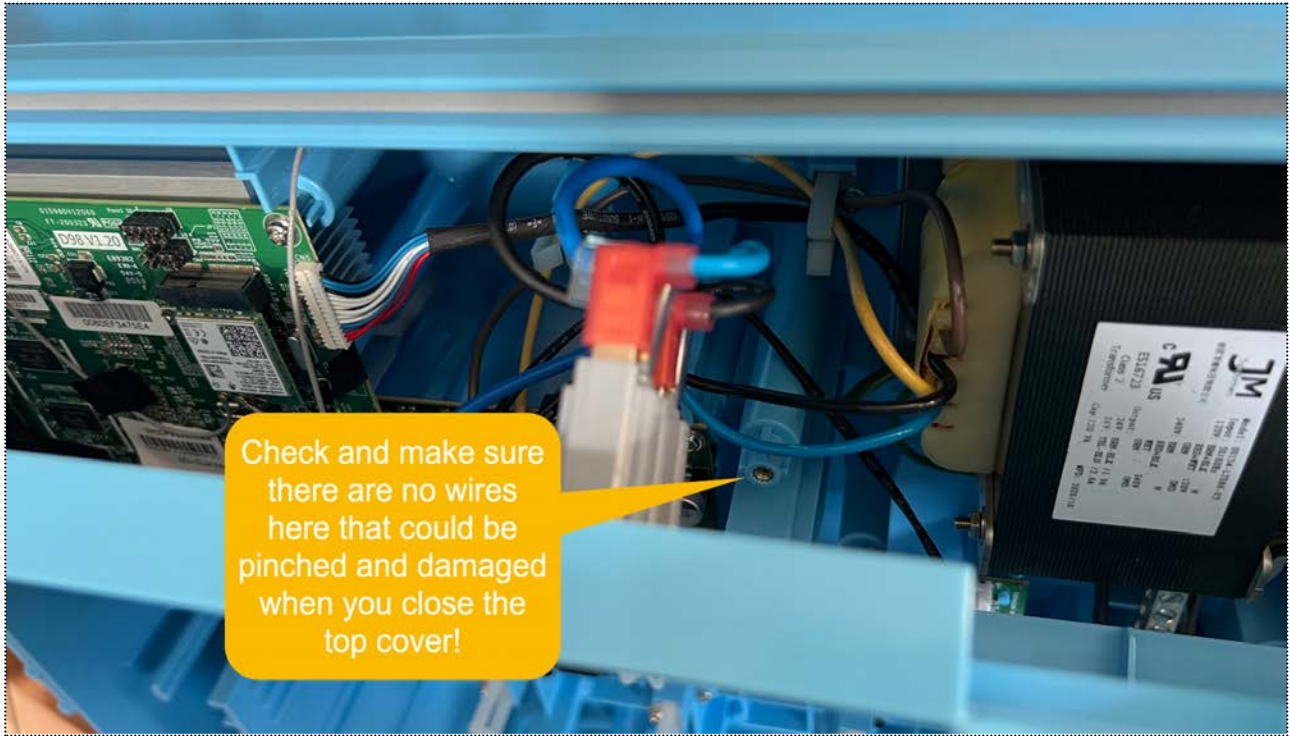


9. The 2-wire cable should be fed down and attached to the **GPIO1 connector**.

DO NOT ATTACH
TO ANY OF THE
RELAY PORTS -
**USE ONLY THE
GPIO1
CONNECTOR.**



10. Once you've completed connecting **both** wires, it's time to close up the top portion of The Attendant and fasten it down. When swinging the top cover back into place, be sure to avoid pinching wires between the cover and the center pillar.



11. Reattach the bottom cover and fasten it.
12. Once that's complete you can power the system back on and begin the probe installation procedure.

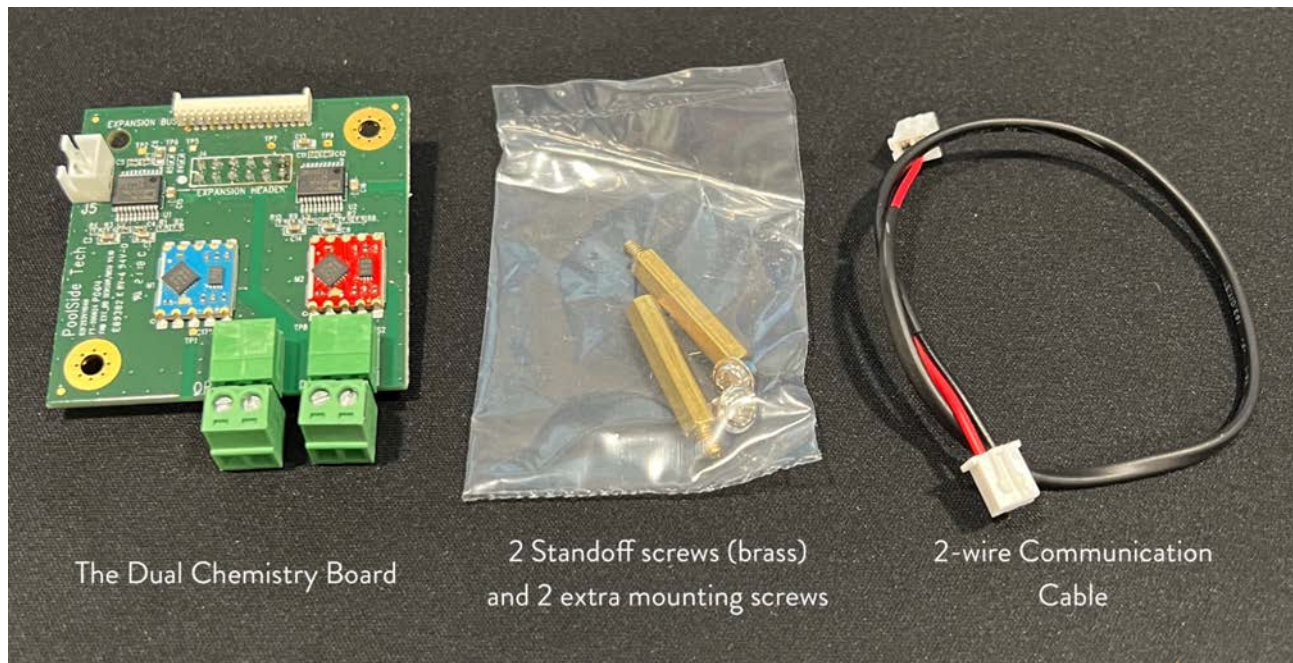
Installation of the Dual Body of Water Chemistry Board

This chapter should be followed when installing the second Chemistry Board with one already installed.

The Dual Body of Water Chemistry board is also known as the “Top Board” in the mobile app.

Prior to installation, be sure to have the following ready:

- The Dual Body of Water Chemistry Board itself
- 2 - M3 mounting screws (included with the Dual Body of Water Chemistry kit)
- 2 - board standoff screws (included with the Dual Body of Water Chemistry kit)
- The 2-wire communication cable to connect the board to the main board of The Attendant (included with the Dual Body of Water Chemistry kit)
- #2 Phillips/crosshead screwdriver
- Small adjustable wrench or 5mm socket wrench
- Small needle-nose pliers



SHUT OFF ALL POWER to The Attendant before attempting this procedure. Do not simply turn the controller off; Be sure to unplug the cable from the outlet or turn off the breaker.

Ensure you completely read all instructions before starting.

Be sure to discharge any static electricity from your body before handling the board and wires. You can do this by using an anti-static wrist strap, or by touching a grounded metal enclosure holding something metallic, like a key.

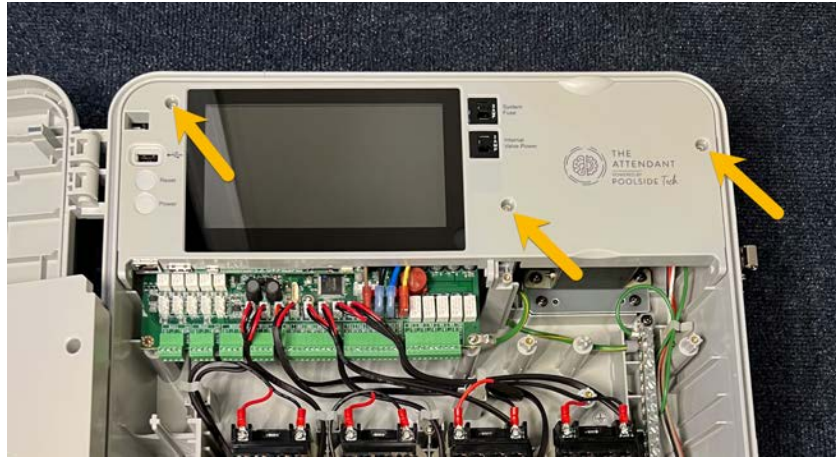
Wiring Installation

Remove the bottom cover of The Attendant.

You can do this by loosening each of the 5 crosshead screws on it, then lifting it up and out. Please note the screws do not come out and will remain attached to the cover.



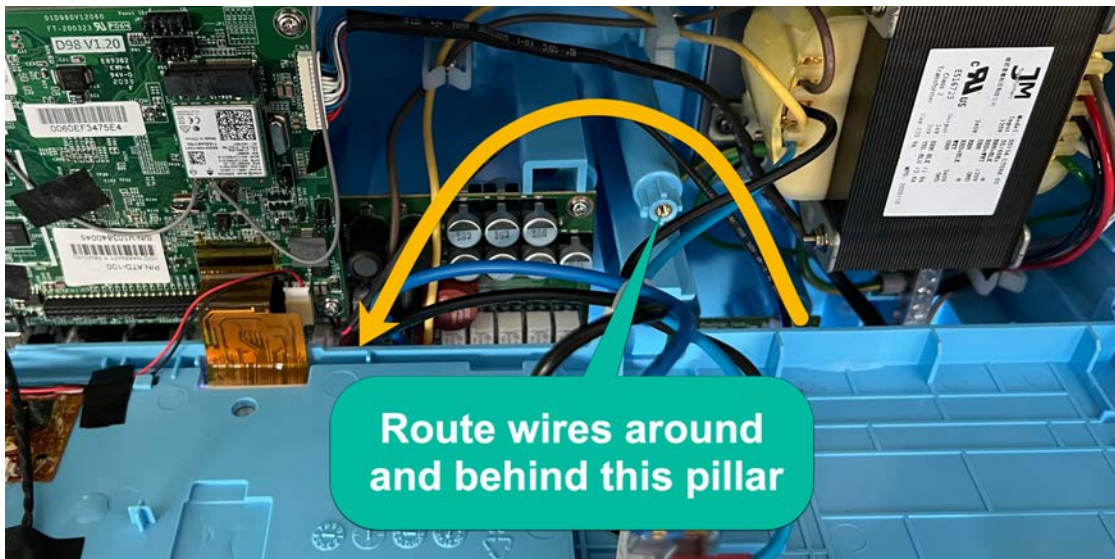
Loosen the mounting screws on the top cover and lower it down from the top.



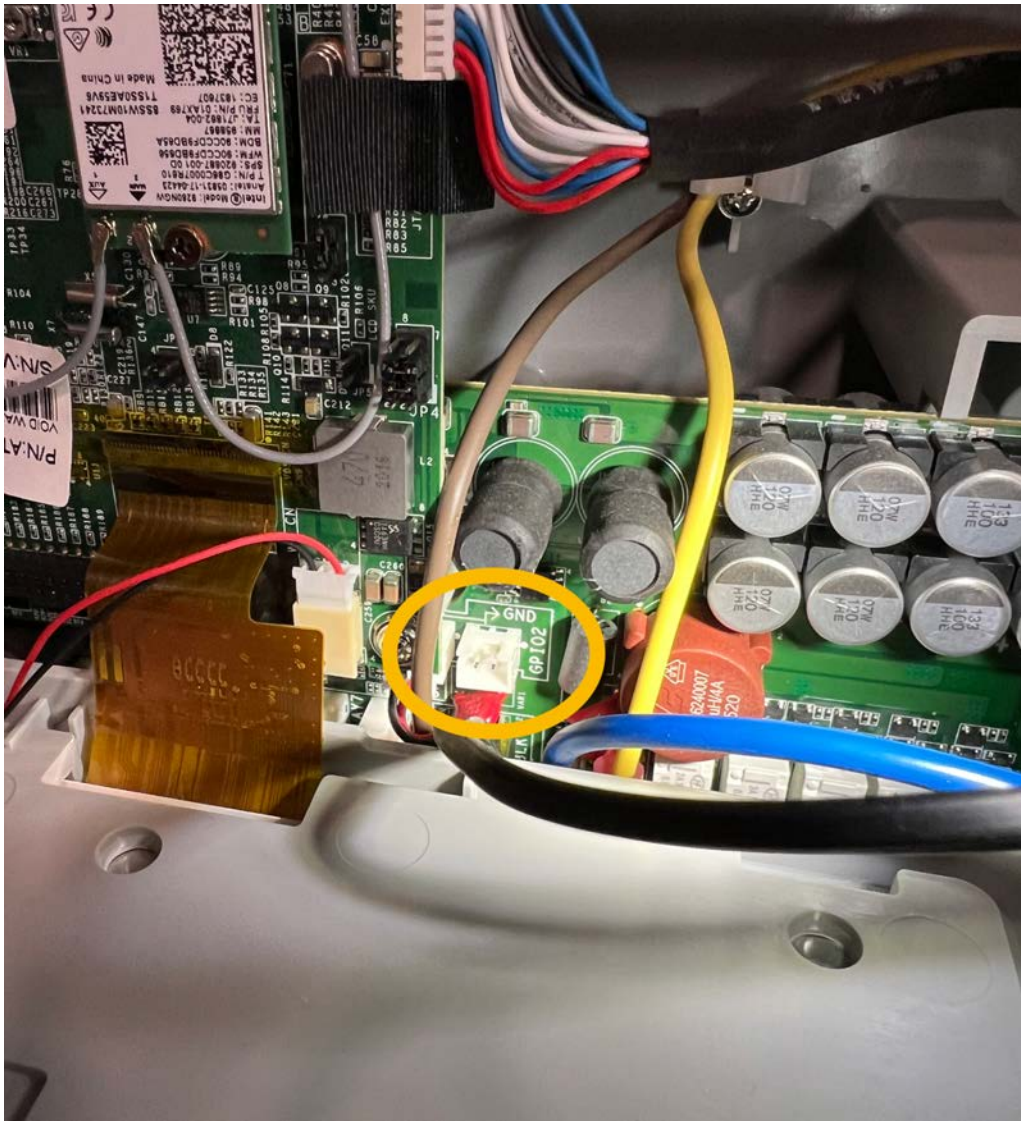
Note: the cover **swings downward** on a hinge. The top cover should not be removed completely.

Route the 2-wire communication cable

Route the 2-wire communication cable from the area where the currently installed Chemistry Board is, up and under the top cover, between the center pillar and the transformer. See the following for guidance:

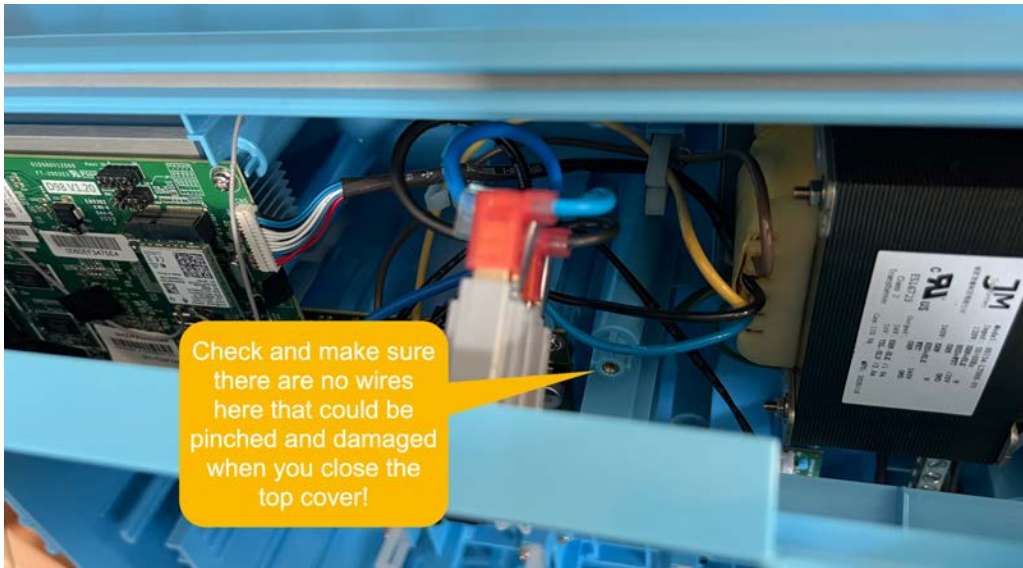


The 2-wire cable should be fed down below towards the GPIO2 connector.



Close up the top portion of The Attendant

Close up the top portion of The Attendant and fasten it down. When swinging the top cover back into place, be sure to avoid pinching wires between the cover and the center pillar. See the following.



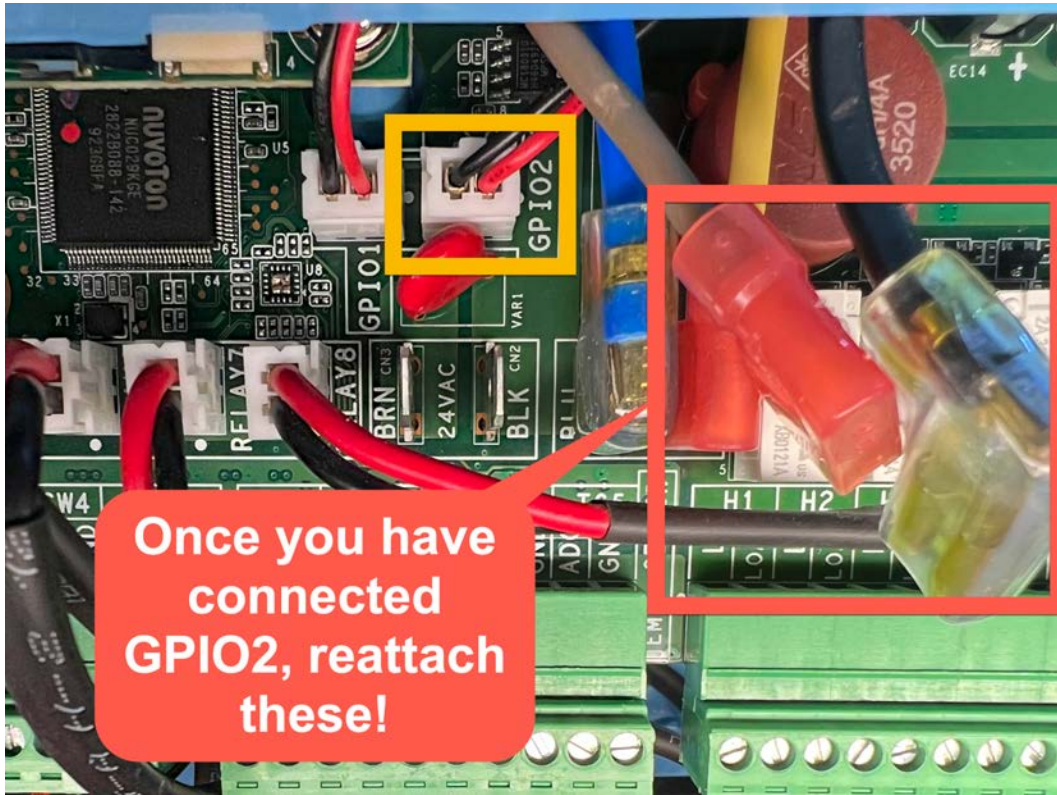
Connect the 2-wire communication cable to the GPIO2 connector

The GPIO2 connector is situated behind some blade spade connectors. It might be necessary to disconnect a couple of the spades so that you can easily connect the 2-wire communication cable to the GPIO2 connector. You can use a small set of needle-nose pliers to pull out the connector if needed.



DO NOT ATTACH THIS WIRE TO ANY OF THE RELAY PORTS - USE ONLY THE GPIO2 CONNECTOR

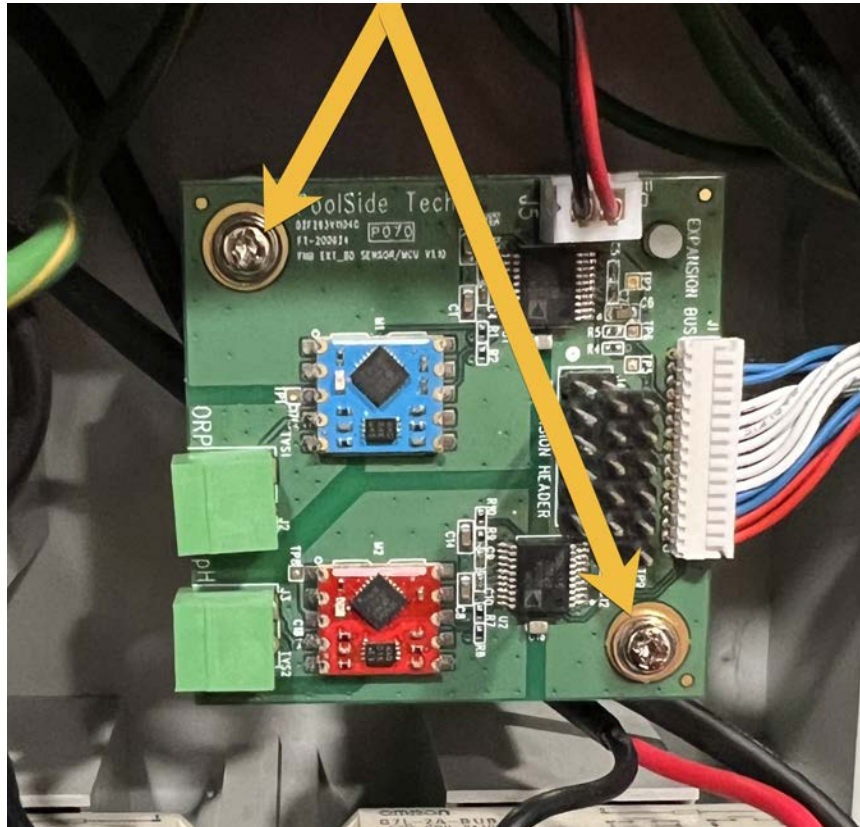
Once you have the connection made, reattach the blade connectors (which provide electrical power to The Attendant).



Dual Body of Water Chemistry Board Installation

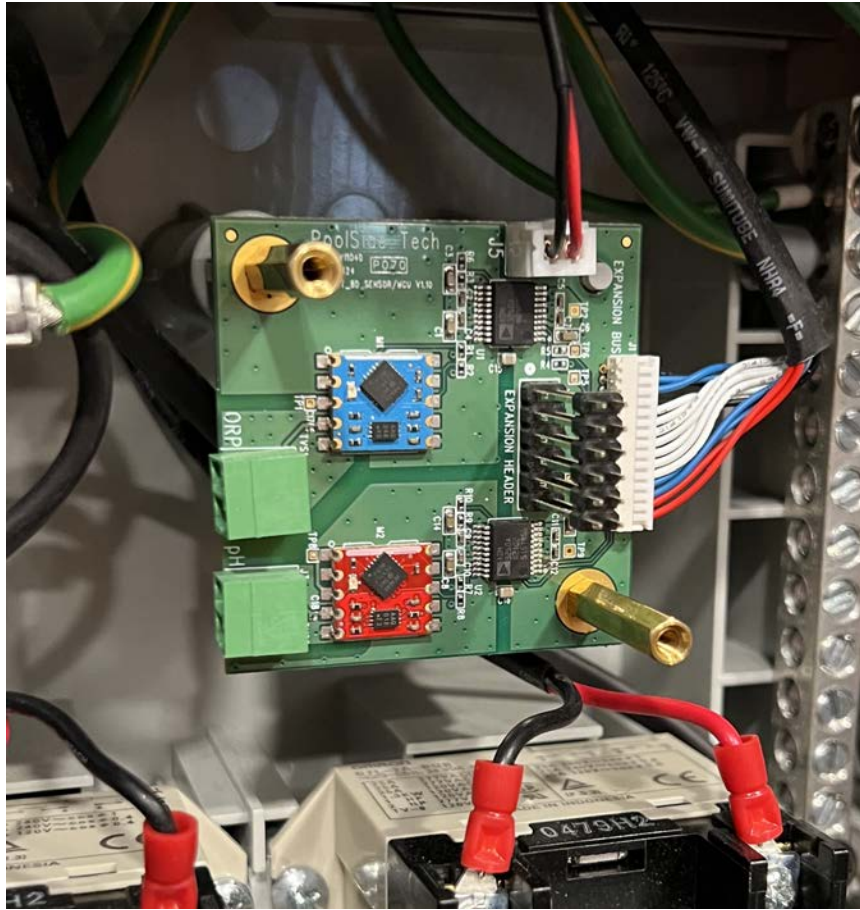
Prepare the currently installed Chemistry board

Next, you will need to remove the two crosshead screws that are currently installed on the first Chemistry board - the “bottom” one.



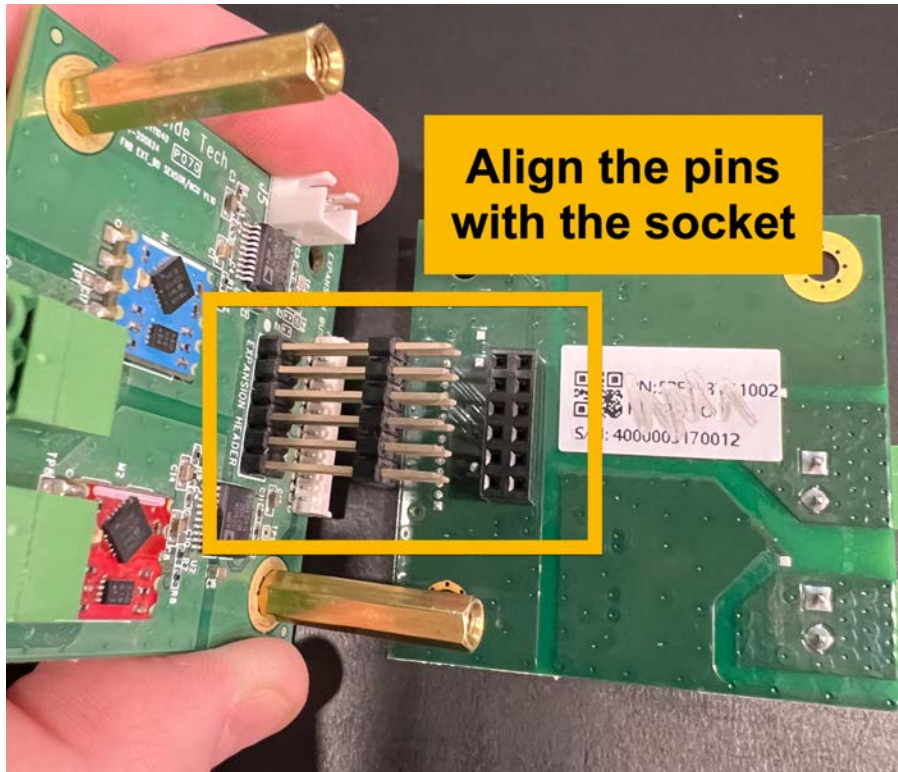
Install the 2 standoff screws

Use the 2 standoff screws to replace the crosshead screws on the bottom board by holding it in place while hand-tightening them in. Use a small wrench or 5mm socket to gently tighten each standoff. Do not over-tighten!

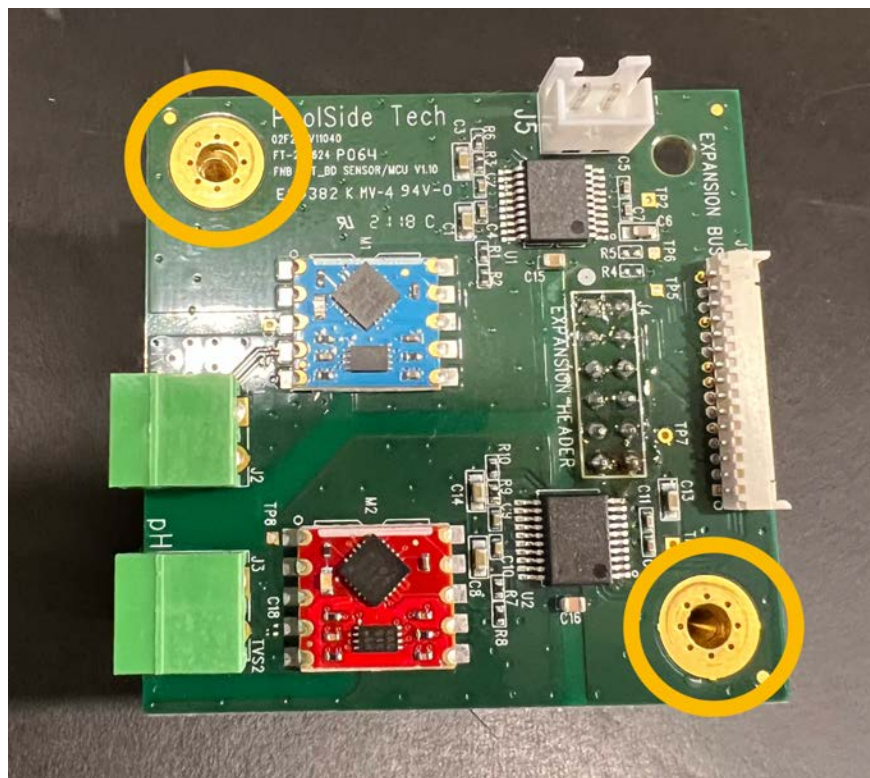


Connect both boards using the 10-pin expansion connector

Align the 10-pin expansion connector from the bottom board with the 10-pin socket on the underside of the Dual Body of Water Chemistry board and connect the 2 boards together on top of one another.

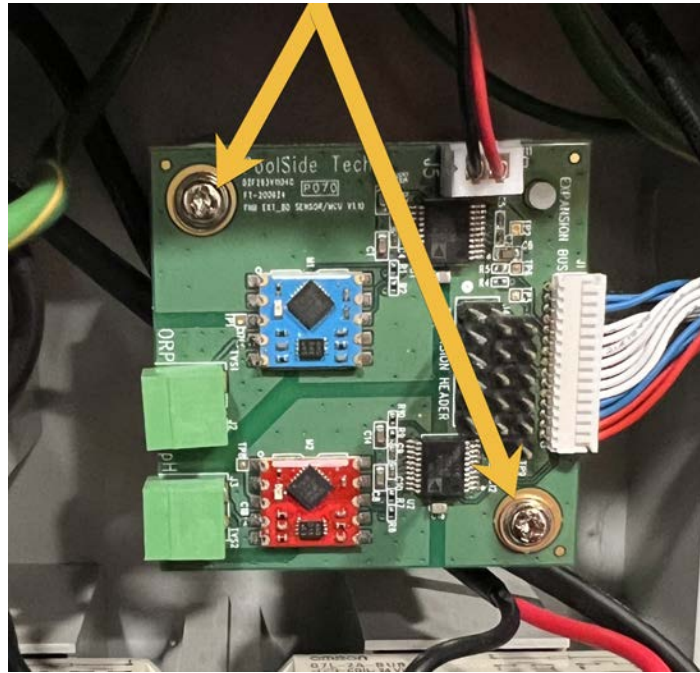


Gently push down on the top board so that the holes from the standoffs are right below the top board mounting holes. Do not use excessive force or else you could damage the connectors and possibly both Chemistry boards.



Secure the Dual Body of Water Chemistry board

Use the 2 M3 crosshead screws provided with the Dual Body of Water Chemistry kit to finish mounting the top board. Tighten gently - do not use excessive force.



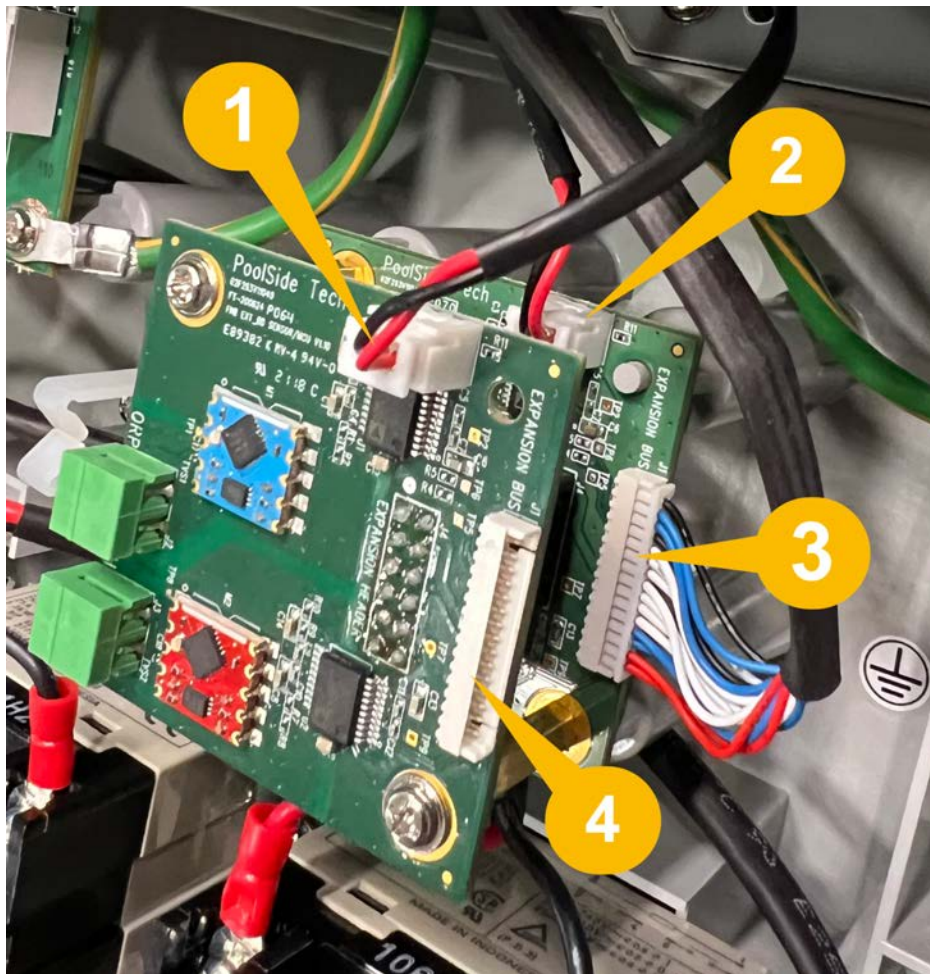
Now that the top Dual Body of Water Chemistry board is installed, carefully connect the 2-wire communication cable into the **J5** connector as shown below.

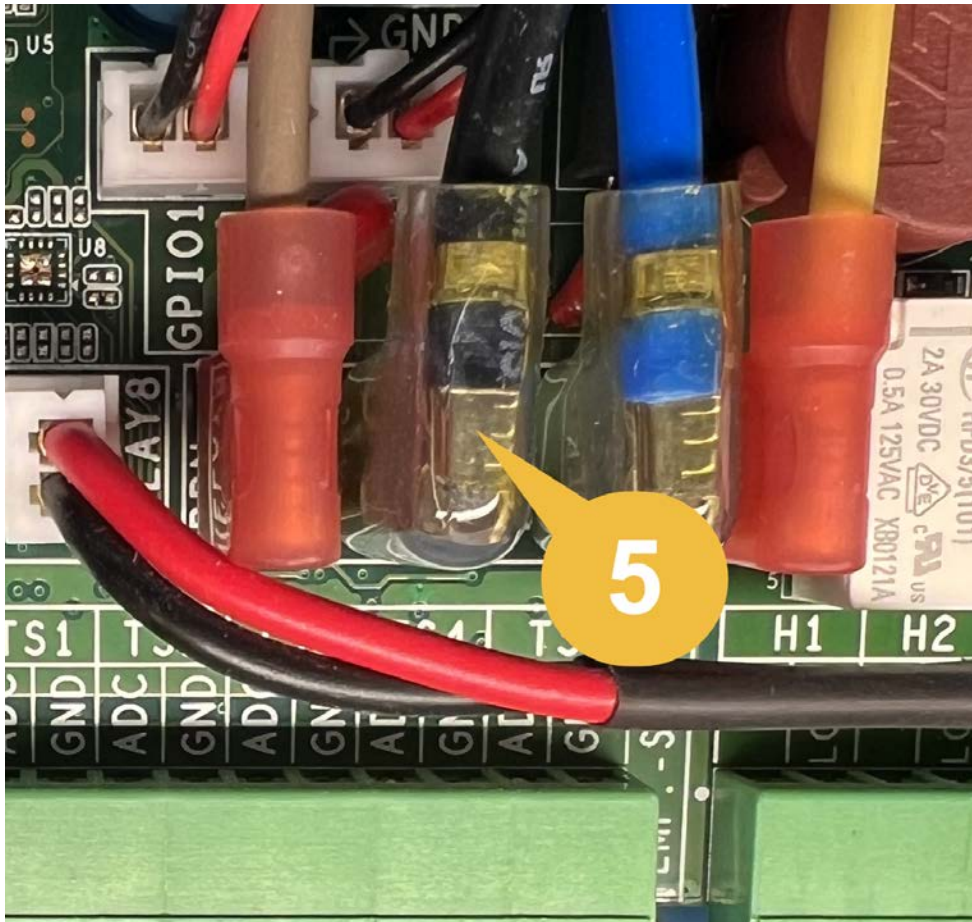


Double Checking Your Work

Re-check the following before moving on.

1. The 2-wire communication cable has been connected from **GPIO2** to the **J5** connector on the top Chemistry board.
2. The bottom Chemistry board **still has** its own 2-wire communication cable still connected to J5 on that board.
3. The bottom Chemistry board **still has** its own 15-pin ribbon wire/connector attached.
4. The top Chemistry board does **NOT** have a 15-pin ribbon wire/connector connected.
5. Any temporarily disconnected **blade/spade connectors have been reattached**.





Finishing Up

- Reattach the bottom cover of The Attendant and fasten it.
- Power the system back on.

Water Sensors (or Probes)

The Attendant is capable of reading both pH (potential Hydrogen) and ORP (Oxidation-Reduction Potential) when equipped with a Chemistry Board and probes are connected that read those values. Although there are many probes that can read these values and be successfully attached to The Attendant, we have found the following probes to have the most consistent readings over time:

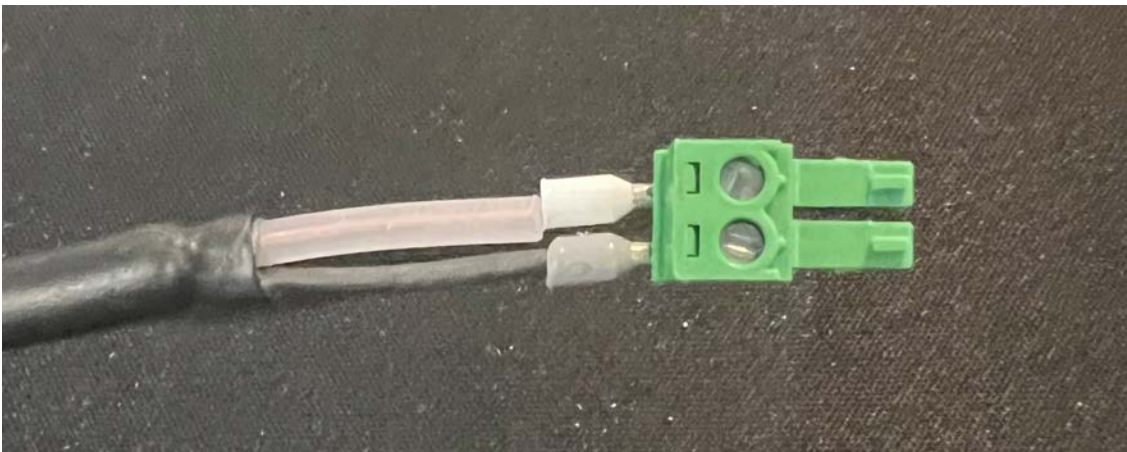
- Pentair pH Sensor (522186)
- Pentair ORP Sensor (522187)
- Sensorex pH Sensor (S465C-PH)
- Sensorex ORP Sensor (465C-ORP-AU)

Wiring Sensors to The Attendant

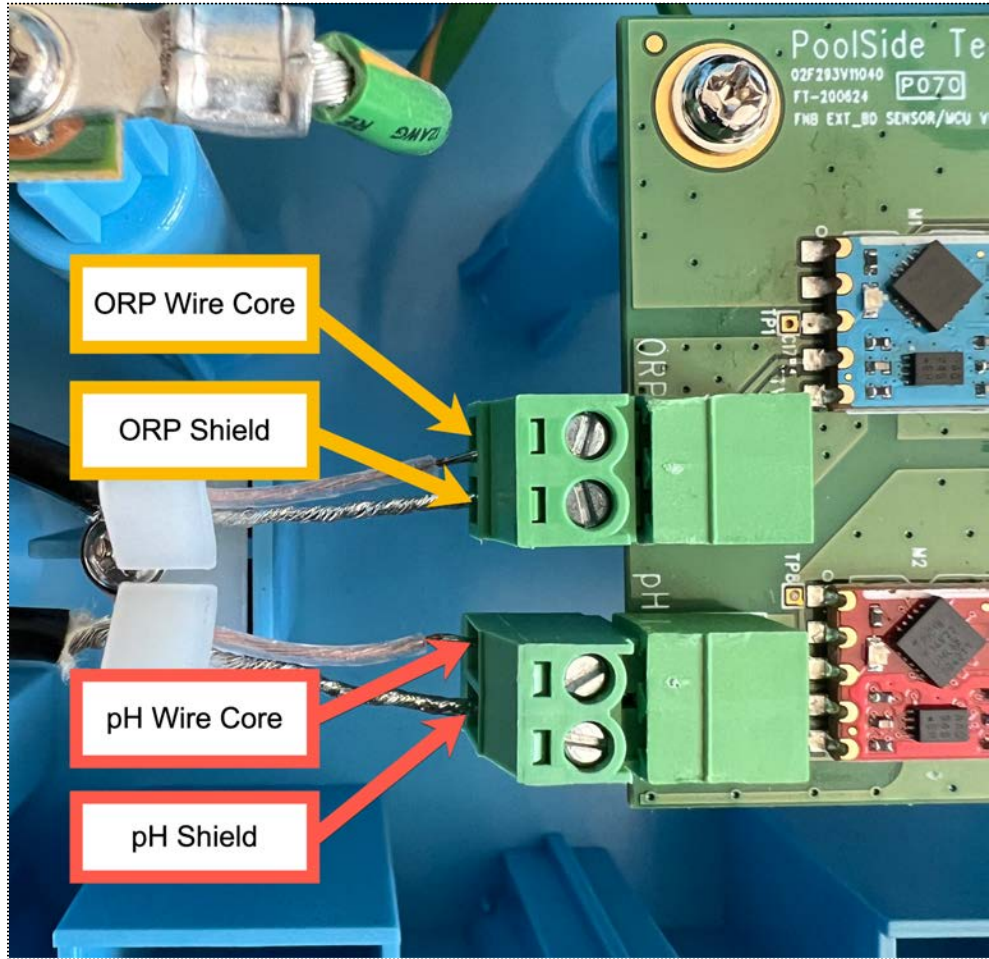
Wiring the water sensors onto the expansion board requires connecting the ORP sensor to the terminals labeled ORP and connecting the pH sensor to the terminals labeled pH.

For both pH and ORP probes, the wire hosts both a “core” wire and a shield wire. The core wire typically is encased in a semi-clear plastic coating and the shield wire could be something formed by twisting the shielding into a “wire” and other times, the shield wire looks just like a standard cable.

The wire core should be connected to the top of the connector, and the shield to the bottom. There have been several different models/brands used, and each looks slightly different.



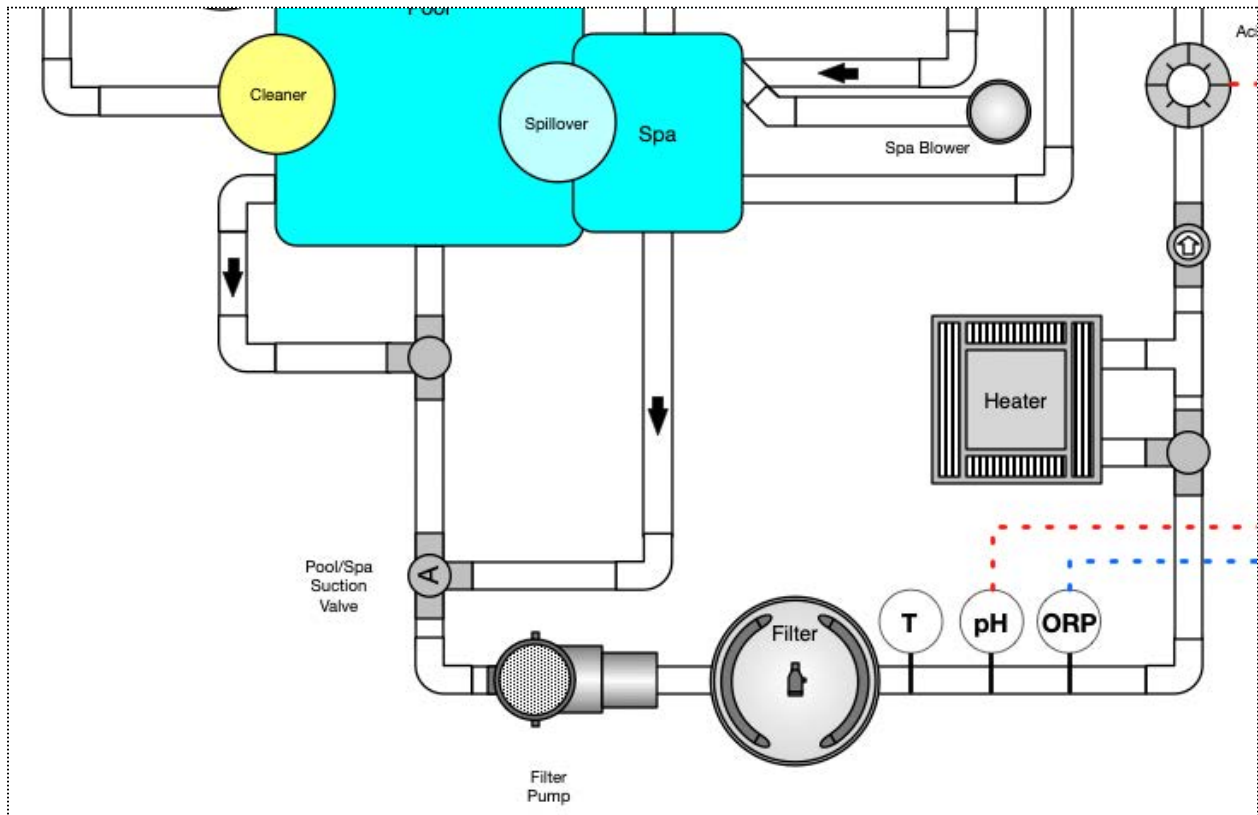
Depending on where you get your cables from, each could look different. Please review the following to match the cable you have with how each wire should be placed into the probe connector.



Installing Sensors into the Pool Plumbing

When installing the probes into the pool plumbing it is important to remember that debris can contaminate the probes and affect the readings from the pool. It is recommended that all probes are installed into a flow cell which has been plumbed into the water lines after the filter.

In the following diagram the pH and ORP probes are marked and installed after the temperature sensor and filter.



Chemical Dosing

The Attendant is capable of dosing chemicals into your pool using chemical pumps, salt chlorinators or both. When you have probes installed to read pH and/or ORP levels you can automatically manage the dosing of chemicals to maintain a safe swimming environment. If you have a salt chlorinator and either don't have an ORP probe installed or you don't want to utilize auto-management of chemicals you can continue to use percentage-based chlorination.



NOTE

Chemical dosing using salt chlorinators is supported on The Attendant without the need for the chemistry management add on kit.

Chemical Pumps

The Attendant can be configured to automatically start and stop a chemical pump to dose liquid chlorine, muriatic acid or CO₂ into the plumbing in order to manage either ORP or pH. See the following for the recommended plumbing configuration for chemical pumps.



NOTE

When installing the chemical pump output into the plumbing it's important to ensure that it's installed after any pool equipment in the plumbing line. Please refer to your manufacturer's documentation.



WARNING

Please ensure you enter the correct values for chemical pump capabilities and chemical mix ratio. Incorrectly entering these values can result in the incorrect amounts of chemicals to your water that could injure the humans in your pool or damage the pool and/or its equipment.

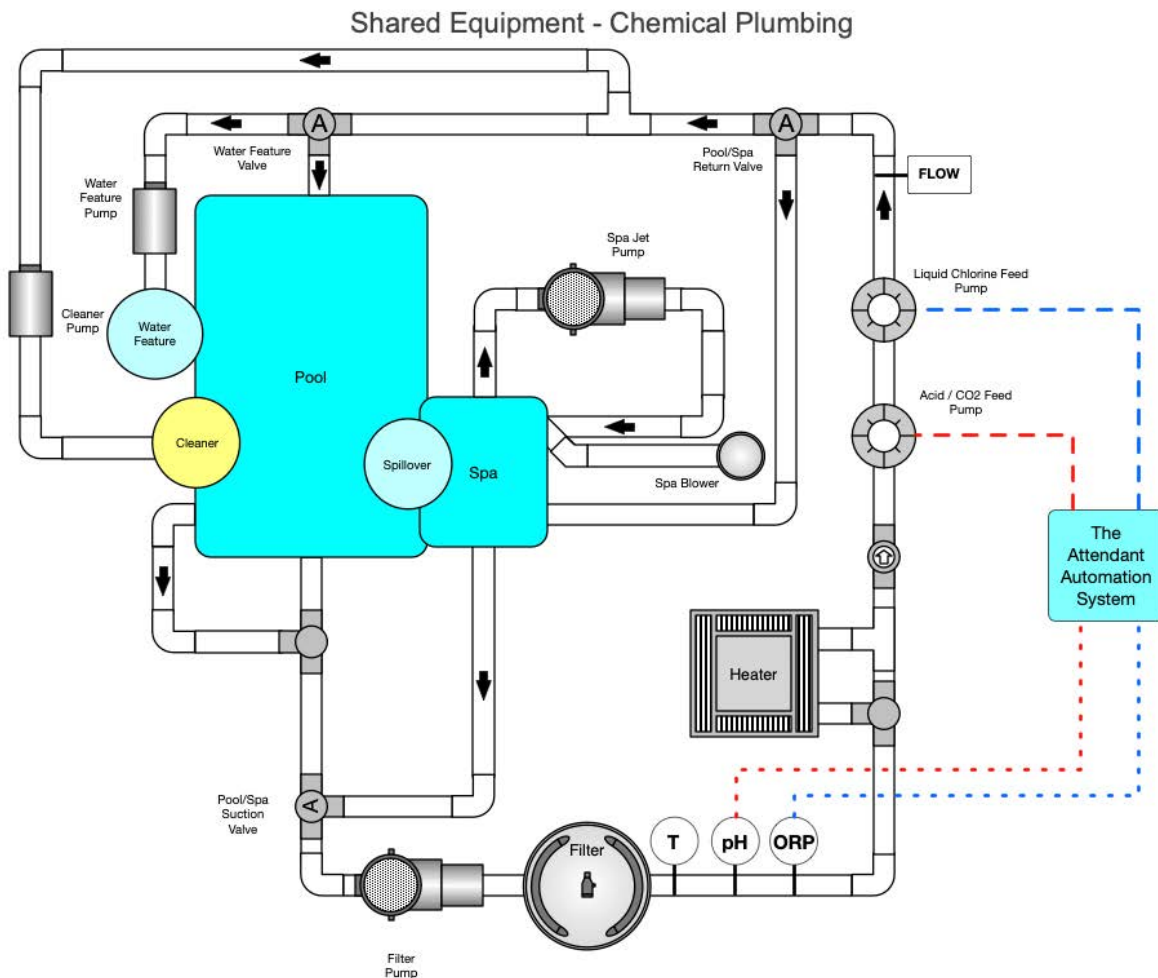


WARNING

Chemical dosing is only supported in configurations where all water circulation pumps responsible for water flow over chemical dispense outlets are controlled or energized by The Attendant. Variable speed pumps must be connected to one of The Attendant data ports 1 through 4. Single speed or

multi-speed pumps must be connected to High Power Relays 1 through 8 on The Attendant. Any configurations where circulation pumps may be activated or de-activated using controls external to The Attendant are not supported and may result in personal injury or property damage.

The following diagram is a basic schematic for a shared equipment pool and spa scenario with probes and chemical feed pumps for muriatic acid and liquid chlorine:



Salt Cell Percentage-Based Chlorination

Most salt cells on the market today support time-based chlorination. This type of system has a predefined time box and applies the user chosen percentage to that time in order to chlorinate for a specific period of time. For example, if the system uses a one

hour duty-cycle window and you have chosen a 75% chlorination output level the system would run for 45 minutes every hour.

This is similar to how your salt system works without automation today but The Attendant gives you the added ability to manage the chlorination output and read current salt levels from your mobile device.

Replacement Parts List

To order replacement parts for your Attendant with Chemistry, please reach out to us on the web at <https://poolside.tech> or via telephone at +1 (267) 810-0600.

Part Number	Description
ATT-2	The Attendant with 2 Relays
ATT-4	The Attendant with 4 Relays
ATT-6	The Attendant with 6 Relays
ATT-8	The Attendant with 8 Relays
ATT-2-CHEM	Attendant-2 + Chemistry Module
ATT-4-CHEM	Attendant-4 + Chemistry Module
ATT-6-CHEM	Attendant-6 + Chemistry Module
ATT-8-CHEM	Attendant-8 + Chemistry Module
ATT-2-DUALCHEM	Attendant-2 + Dual Chemistry Module
ATT-4-DUALCHEM	Attendant-4 + Dual Chemistry Module
ATT-6-DUALCHEM	Attendant-6 + Dual Chemistry Module
ATT-8-DUALCHEM	Attendant-8 + Dual Chemistry Module
ATT-CHEM	Chemistry Module Kit (1 Card, 2-25ft BNC Cables, Calibration Fluids)
ATT-DUALCHEM	Dual Chemistry Module (2 Cards, 4-25ft BNC Cables, 2-Calibration Fluids)
ATT-DUALCHEM-EXP	Dual Chemistry Expansion Board (1 EXP Card, 2-25ft BNC Cables, Calibration Fluids)
ATT-CHEM-CABLE	Chemistry 25' Probe Cable
ATT-CFK	pH and ORP Calibration Fluid Kit (1 each 4, 7, 10 pH, 1 ORP)
ATT-PH-CALIBRATION	pH Calibration Fluid Pack (1 each 4, 7, 10 pH)
ATT-ORP-CALIBRATION	ORP Calibration Fluid (1 pouch)
ATT-TRANSFORMER-V1	Attendant Transformer
ATT-HUB-BOARD-V1	Attendant Connections Module
ATT-TOP-BOARD-V1	Attendant Compute Module w/LCD screen and top cover
ATT-HVRK	High Voltage Relay Kit (10 Relays/Cables)

ATT-HVR2P	High Voltage Relay Kit (2 Relays/Cables)
ATT-HVR1P	High Voltage Relay Kit (1 Relay/Cable)
ATT-LACK	Legacy Automation Conversion Kit
ATT-TSK	Temperature Sensor Kit (2 Thermistors)
522186	Pentair pH Sensor**
522187	Pentair ORP Sensor**

** pH and ORP sensors are also available through other pool and spa supply retailers.

Applicable Operating Ranges for pH and ORP Probes

pH Probe: pH Range: 6.8 to 8.2

ORP Probe: ORP Range: 0 to 999 mV

Important Safety Instructions When Working With Pool Chemistry Management

- Read and understand all 3rd party instruction manuals for equipment that you are using.
- Do not permit children to operate any chemistry management equipment.
- It is recommended to validate all readings independently at least once a month.
- If there is a chemical related alarm, follow the troubleshooting instructions and/or reach out to your pool professional for assistance.
- Wear protective eyewear and chemical-resistant clothing including chemical-resistant gloves when working directly with chemicals.
- Do not permit children into any area where you are working directly with chemicals.
- When working directly with chemicals, work in a well ventilated area, preferably in an outdoor area.
- Do not mix chemicals together as this may result in the formation of a hazardous gas.
- Regularly inspect chemical feed system tubing for cracks and leaks. Replace damaged tubes immediately.

Precautions for Managing pH using Muriatic Acid



DANGER

Health Risk

Muriatic acid can cause severe burns to the skin, mouth and eyes.



DANGER

Health Risk

Inhalation of muriatic acid vapors may cause severe lung, nose and respiratory damage. It may even cause death.



DANGER

Health Risk

Swallowing muriatic acid can be fatal. Contact your local poison control center or physician immediately if this occurs.



DANGER

Health Risk

Acids are dangerous substances to handle, it can easily injure people and harm equipment if not properly contained, transported, stored and dispensed.

- Remember to always add acid to water when diluting, not the other way around.
- Do not mix chemicals together and store acid in a separate area than you store any other chemicals.
- Store muriatic acid at a temperature below 80°F (27 °C).
- It is recommended to use a low flow chemical feed pump for dosing muriatic acid.
- Regular maintenance and inspection of acid dispensing equipment is recommended.

Precautions for Managing ORP using Liquid Chlorine



DANGER

Health Risk

Liquid chlorine can cause severe burns to the skin, mouth and eyes.



DANGER

Health Risk

Inhalation of liquid chlorine vapors may cause severe lung, nose and respiratory damage. It may even cause death.



DANGER

Health Risk

Swallowing liquid chlorine can be fatal. Contact your local poison control center or physician immediately if this occurs.

- Do not mix chemicals together and store liquid chlorine in a separate area than you store any other chemicals.
- It is recommended to use a low flow chemical feed pump for dosing liquid chlorine.
- Regular maintenance and inspection of chlorine dispensing equipment is recommended.

Additional Safety Instructions

- **WARNING - Read and Follow All Instructions.** Before installation, read and ensure you are able to comply with all warnings, notices and safety instructions in this manual.
- **DANGER - Risk of Electric Shock.** The installation of this product must be performed by a qualified and licensed pool technician in the jurisdiction in which it is being installed. If there are no governing state or local requirements, a professional with sufficient experience in pool equipment installation and maintenance can be used to ensure that all instructions in this manual can and will be followed exactly.
- **DANGER - Risk of Electric Shock.** All electrical work must be performed by a licensed electrician and conform to all national, state, and local codes.
- **WARNING - Risk of Electric Shock.** Install the controller at least six (6) feet (2 meters) from the inside wall of the pool and/or spa/hot tub using non-metallic plumbing. Canadian installations must be a minimum of three (3) meters from the water.
- **WARNING - Risk of Electric Shock.** Disconnect all AC power during installation and servicing of attached equipment.
- **WARNING - Risk of Electric Shock.** Before removing the high voltage cover panel from the enclosure switch off the main power circuit breaker that supplies power to the controller box.
- **WARNING - Risk of Electric Shock.** Improper installation and/or operation can create an electrical hazard which can cause serious injury, property damage, or death.
- **WARNING - Risk of Electric Shock.** A ground-fault circuit-interrupter must be provided if this device is used to control underwater lighting fixtures. Please refer to the governing local electrical codes.
- **WARNING - Risk of Accidental Drowning.** Do not use The Attendant to control an automatic pool cover
- **WARNING** - To reduce the risk of injury, please ensure that you use this control system to control only pool/spa heaters that have a built-in operating and high limit control to limit the water temperature for pools and spas. This device should not be relied upon as a safety limit control for heating the pool or spa
- **WARNING** - To reduce the risk of injury, do not use The Attendant to control fire pits or any fire related equipment.

Initial Software Configuration Instructions

Connecting to the Network

The Attendant requires a connection to the Internet in order to communicate with the mobile application as well as receive cloud updates. You can use the onboard Wi-Fi or Ethernet connections to connect The Attendant to your home network.



NOTE

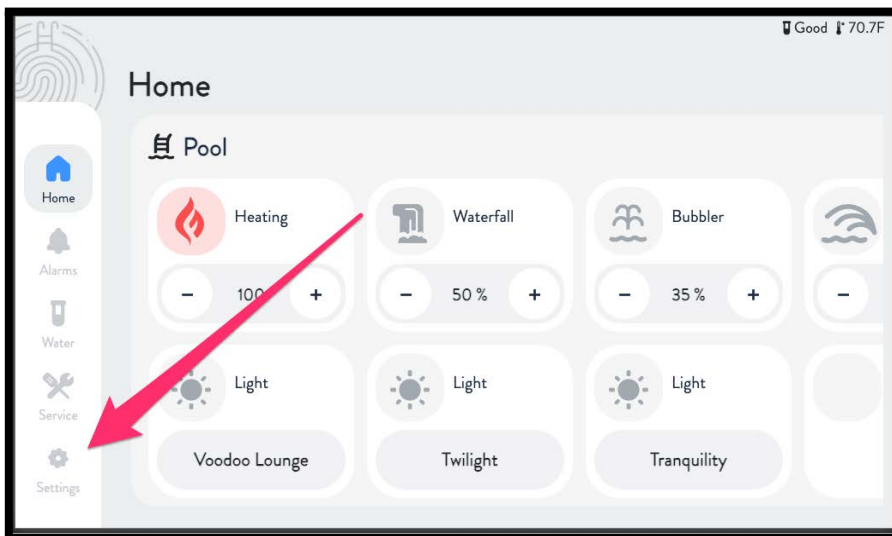
The Attendant only supports **DHCP (Dynamic Host Configuration Protocol)** network connections for both Ethernet and Wi-Fi. Please ensure this is available and configured on the local network.

To configure a **wired Ethernet** connection:

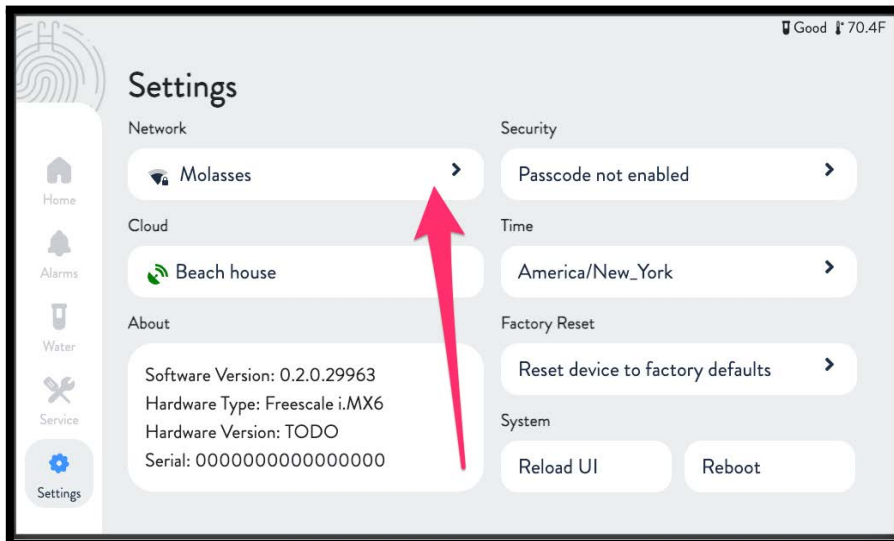
1. Plug a CAT-6 (or better) Ethernet cable into The Attendant using the supplied port.

To configure the **Wi-Fi** connection:

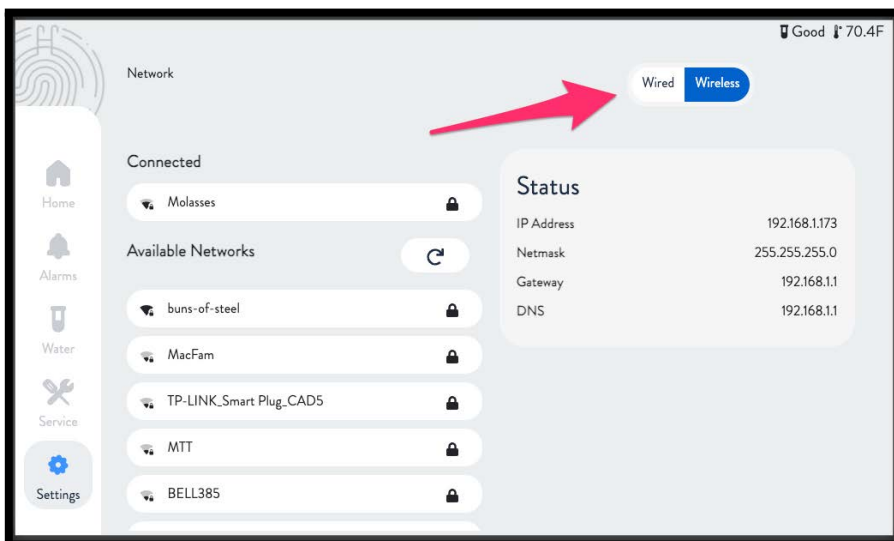
1. Tap on the settings button located on the left navigation menu:



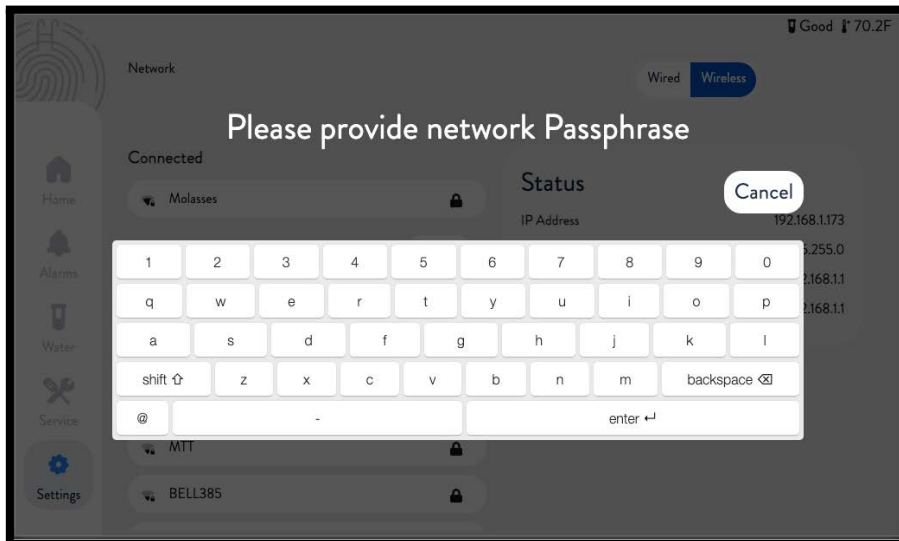
2. Tap the button under the Network label. If you are configuring this for the first time it will say "Not Connected".



3. Click the Wireless button in the top right hand corner of the screen. To bring up the list of available Wi-Fi networks.



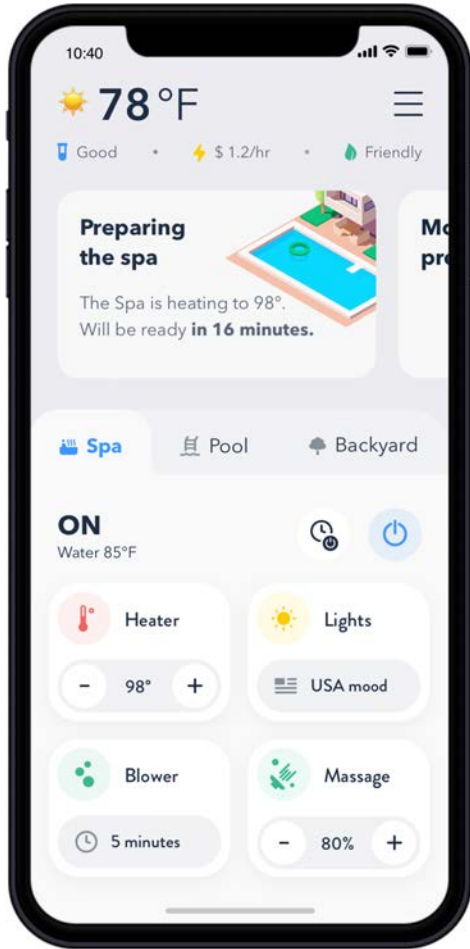
4. Tap on the network you wish to connect to and enter the password when prompted to do so and press the on screen Enter button



5. Regardless of the connection you choose, the screen will show the connection details under the "Status" box on the chosen connection type screen once it acquires an address from the local network.

Configuring The Attendant

Use the Poolside Mobile Application



While the onboard screen provides basic configuration and control over the pool devices, The Attendant by Poolside really comes to life with the mobile application. It is available on both Google Play (Android) and the App Store (Apple iOS).



Once you have the Poolside Mobile app installed, you can create a new account or log into an existing one.

Tap on “Sites” in the app and press the blue plus (+) button to register the code that is shown on The Attendant’s screen.

Please see the **Quick Setup Guide** located on our online knowledgebase @ <https://poolside.support/>

Additional Safety Instructions

- **WARNING** - Failure to follow warning notices and safety instructions may result in property damage, personal injury, or death.
- **WARNING - Hazardous Pressure Hazard:**
 - Pool and spa fluid systems operate under hazardous pressure during start up, normal operation and after pump shut down. Stand clear of pumps and filters during start up.
 - Failure to follow safety and operation instructions may result in violent separation of the pump housing, pump cover, filter housing or clamps due to system pressure, which may cause property damage, severe injury or death.
 - Before servicing pool and spa equipment, ensure all system and pump controls are in the off position.
 - Before starting the system pump, ensure that all valves are in a position such that water flows back to the pool or spa.
 - Do not change filter control valve position during normal operation, shut the pumps off first.
- **WARNING - Suction Entrapment Hazard:**
 - The suction in suction outlets (including damaged, broken, missing, or unsecured outlets) can cause severe injury and possibly death due to the following hazards:
 - Hair can become entangled in a suction outlet cover.
 - Inserting limbs into an open suction outlet sump or cover can result in mechanical binding or swelling of the limb that was inserted.
 - Jewelry, swimsuit, hair accessories, fingers or toes can be caught in an open suction outlet cover resulting in a mechanical entrapment.
 - Negative pressure applied to a large portion of the body or limbs can result in an entrapment.
 - Suction applied directly to the intestines through an unprotected suction outlet can cause evisceration/disembowelment.
 - To reduce the risk of Suction Entrapment Hazards:
 - When suction outlets are small enough to be blocked by a person, ensure that a minimum of two outlets per pump are installed and that valves are configured to ensure suction from both.
 - Suction outlets on the same surface connected must be at least 1 meter (3 feet) apart.
 - Dual suction (or main drains) fittings shall be installed in locations that avoid dual blockage by a single person.
 - Dual suction (or main drains) fittings shall not be located on seating areas or on the backrest of a seating area.

- Do not use a pool or spa if the suction outlets are missing components or damaged in any way.
- Ensure suction outlets are installed in accordance with the latest ASME, ASPA standards and CPSC guidelines and that all applicable national, state and local codes are followed.
- Failure to remove any suction outlet plugs used for winterizing or testing the pool or spa can increase the likelihood of a suction entrapment listed above.
- Keep all suction outlets and their components clear of debris (leaves, hair, dirt, etc.) as this can increase the likelihood of a suction entrapment listed above.
- Suction outlets should be inspected regularly to ensure they are not damaged or missing any components and replaced if they are found to be defective or older than 10 years.

Additional Warnings

Read and follow all instructions contained in this manual.

- **DANGER - Risk of Electric Shock.** The installation of this product must be performed by a qualified and licensed pool technician in the jurisdiction in which it is being installed. If there are no governing state or local requirements, a professional with sufficient experience in pool equipment installation and maintenance can be used to ensure that all instructions in this manual can and will be followed exactly.
- **DANGER - Risk of Electric Shock.** All electrical work must be performed by a licensed electrician and conform to all national, state, and local codes.
- **WARNING - Risk of Electric Shock.** Install the controller at least six (6) feet (2 meters) from the inside wall of the pool and/or spa/hot tub using non-metallic plumbing. Canadian installations must be a minimum of three (3) meters from the water.
- **WARNING - Risk of Electric Shock.** Disconnect all AC power during installation and servicing of attached equipment.
- **WARNING - Risk of Electric Shock.** Before removing the high voltage cover panel from the enclosure switch off the main power circuit breaker that supplies power to the controller box.
- **WARNING - Risk of Electric Shock.** Improper installation and/or operation can create an electrical hazard which can cause serious injury, property damage, or death.
- **WARNING - Risk of Electric Shock.** A ground-fault circuit-interrupter must be provided if this device is used to control underwater lighting fixtures. Please refer to the governing local electrical codes.
- **WARNING - To reduce the risk of injury,** please ensure that you use this control system to control only pool/spa heaters that have a built-in operating and high limit control to limit the

water temperature for pools and spas. This device should not be relied upon as a safety limit control for heating the pool or spa

- **WARNING - To reduce the risk of injury**, do not use The Attendant to control fire pits or any fire related equipment.
- **WARNING - Risk of Accidental Drowning.** Do not use The Attendant to control an automatic pool cover.
- **WARNING - Hazardous Pressure.** Stand clear of the pump and filter during start up. Equipment is pressurized and may cause injury or death in the event of an equipment failure.
- **WARNING** - Failure to follow warning notices and safety instructions may result in property damage, personal injury, or death.
- Unless otherwise noted in the manual, use copper conductors for all connections.
- Before installation, read and ensure you are able to comply with all warnings, notices and safety instructions in this manual.

Suction Entrapment Hazard

- The suction in suction outlets (including damaged, broken, missing, or unsecured outlets) can cause severe injury and possibly death due to the following hazards:
 - Hair can become entangled in a suction outlet cover
 - Inserting limbs into an open suction outlet sump or cover can result in mechanical binding or swelling of the limb that was inserted.
 - Jewelry, swimsuit, hair accessories, fingers or toes can be caught in an open suction outlet cover resulting in a mechanical entrapment
 - Negative pressure applied to a large portion of the body or limbs can result in an entrapment.
 - Suction applied directly to the intestines through an unprotected suction outlet can cause evisceration/disembowelment.
- To reduce the risk of Suction Entrapment Hazards:

- When suction outlets are small enough to be blocked by a person, ensure that a minimum of two outlets per pump are installed and that valves are configured to ensure suction from both.
 - Suction outlets on the same surface connected must be at least 3' (1 metre) apart.
 - Dual suction (or main drains) fittings shall be installed in locations that avoid dual blockage by a single person.
 - Dual suction (or main drains) fittings shall not be located on seating areas or on the backrest of a seating area.
 - Do not use a pool or spa if the suction outlets are missing components or damaged in any way.
 - Ensure suction outlets are installed in accordance with the latest ASME, ASPA standards and CPSC guidelines and that all applicable national, state and local codes are followed.
- Failure to remove any suction outlet plugs used for winterizing or testing the pool or spa can increase the likelihood of a suction entrapment listed above.
 - Keep all suction outlets and their components clear of debris (leaves, hair, dirt, etc.) as this can increase the likelihood of a suction entrapment listed above.
 - Suction outlets should be inspected regularly to ensure they are not damaged or missing any components and replaced if they are found to be defective or older than 10 years.

Hazardous Pressure Hazard

- Pool and spa fluid systems operate under hazardous pressure during start up, normal operation and after pump shut down. Stand clear of pumps and filters during start up.
- Failure to follow safety and operation instructions may result in violent separation of the pump housing, pump cover, filter housing or clamps due to system pressure, which may cause property damage, severe injury or death.
- Before servicing pool and spa equipment, ensure all system and pump controls are in the off position.
- Before starting the system pump, ensure that all valves are in a position such that water flows back to the pool or spa.
- Do not change filter control valve position during normal operation, shut the pumps off first.

Appendix A - Connection Table

Connection	Equipment	Description
VALVE1		
VALVE2		
VALVE3		
VALVE4		
VALVE5		
RELAY1		
RELAY2		
RELAY3		
RELAY4		
RELAY5		
RELAY6		
RELAY7		
RELAY8		
BUS1		
BUS2		
BUS3		
BUS4		
SW1		
SW2		
SW3		
SW4		
SW5		

TS1		
TS2		
TS3		
TS4		
TS5		
H1		
H2		
H3		
H4		
H5		