

SPHERE

SOLAR POOL HEATING ENERGY REGULATOR ELEMENT

SPHERE PRO

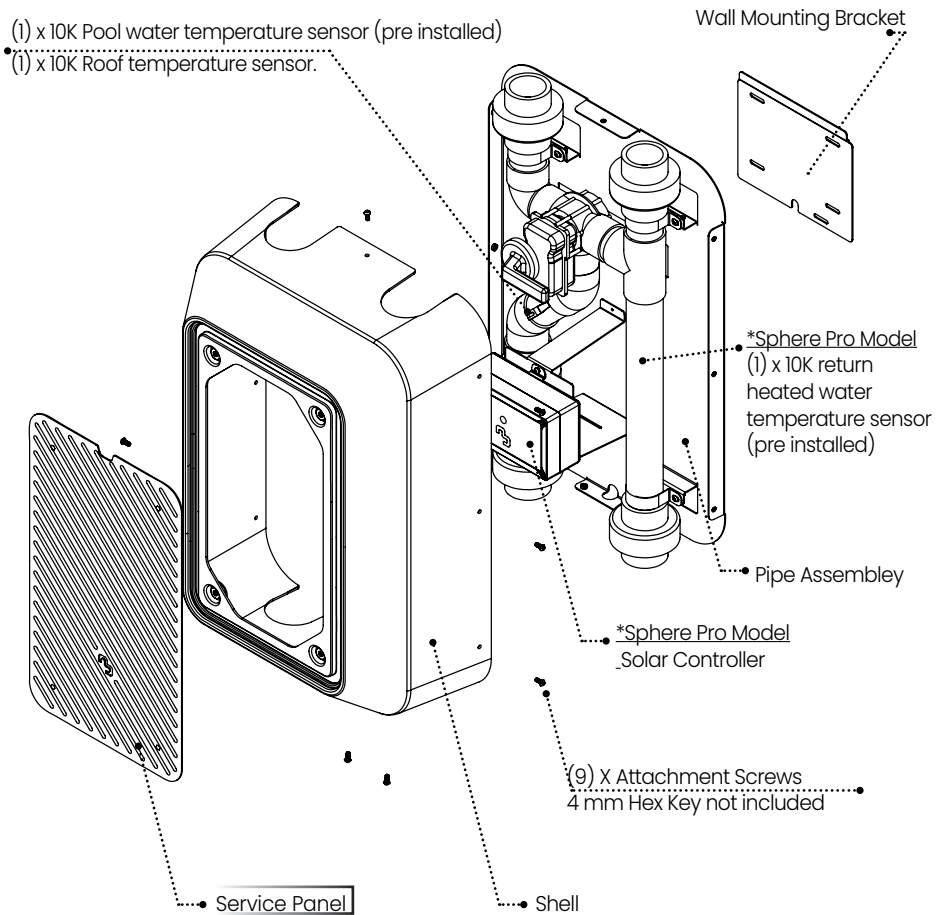
Installation and operation manual



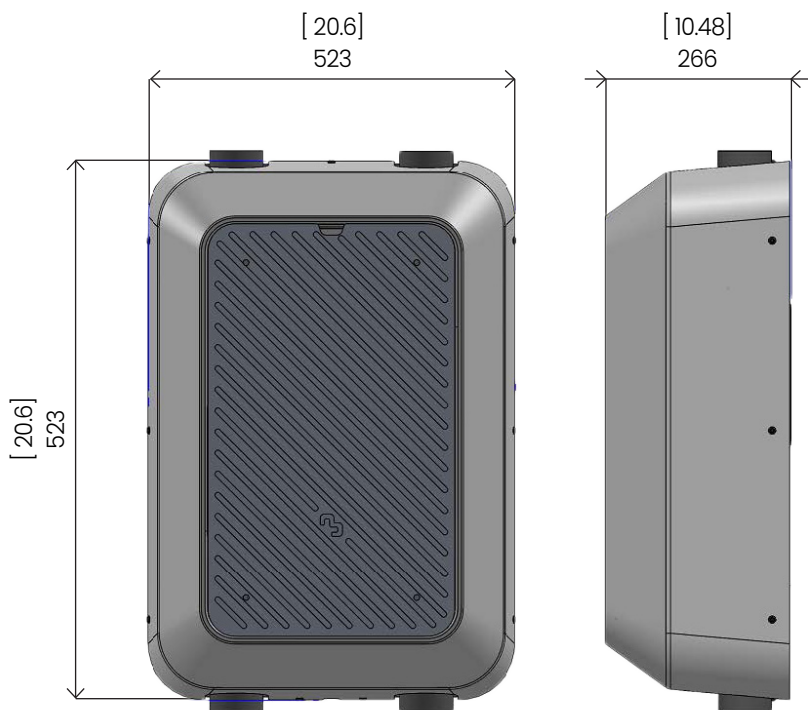
INDEX

Topic	Page
What is in the box.....	3
Overall dimensions.....	4
How to mount the unit to the wall.....	5
Plumbing diagram (typical).....	6
Controller Installation.....	7
App installation and registration.....	13

What is in the box?

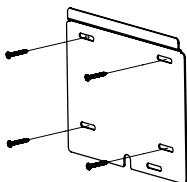


Overall dimensions

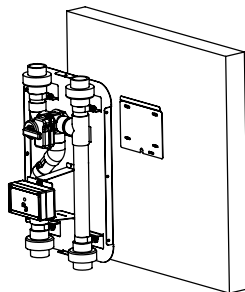


How to mount the unit to the wall

1. Install wall mounting bracket to wall at desired height and location (use a level)

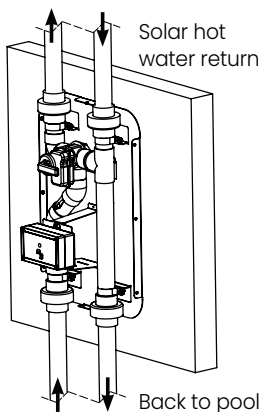


2. Mount the pipe assembly to the wall mounting bracket

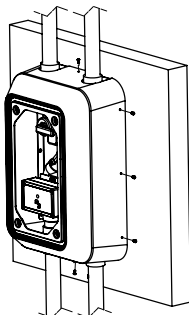


3. Assemble and glue Pool & roof's feed and return

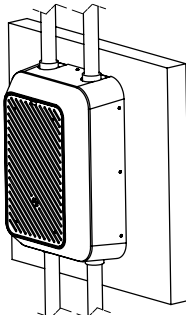
To solar collectors



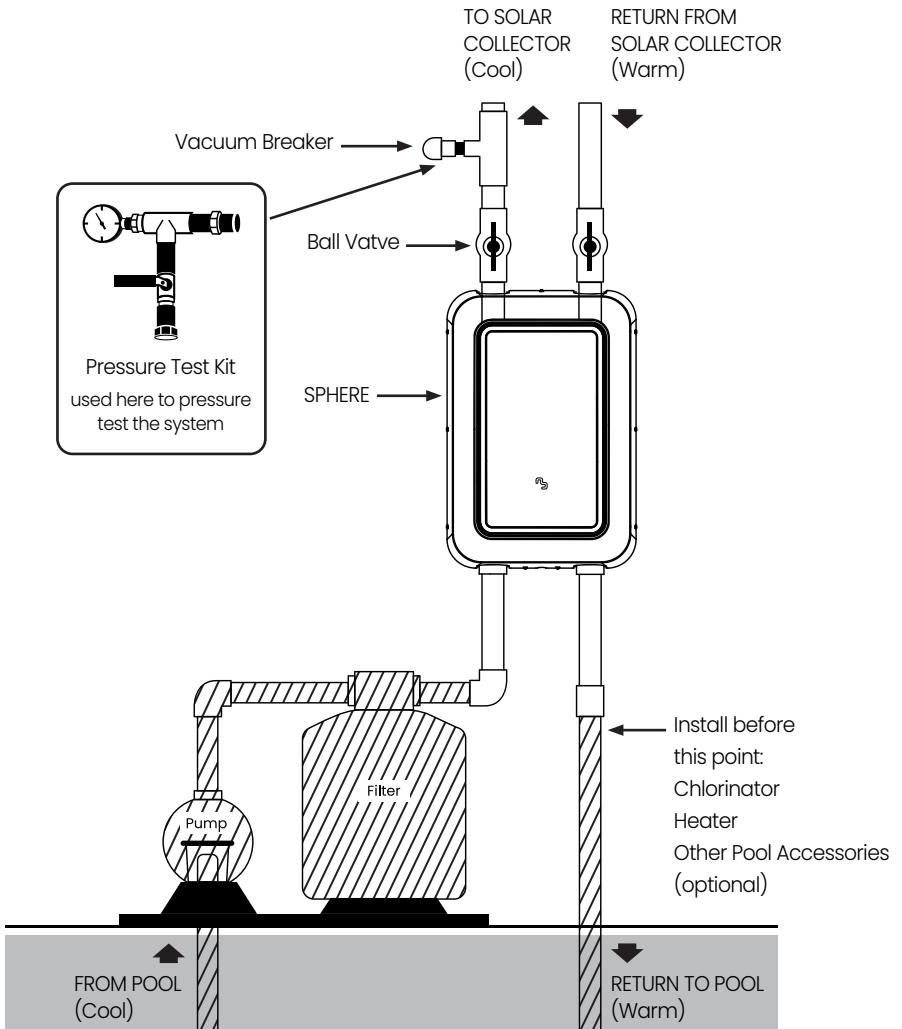
4. Assemble Shell and fasten (9) screws in place



5. Place service panel. Magnet's catches will self align and secure it in place



Plumbing diagram (typical)



SPHERE PRO CONTROLLER

Installation

SPHERE Pro controller – General overview



1. Aux 1: Single speed Filtration Pump
2. Aux 2: Single speed Booster Pump
3. AC Wire Input (See Next Page)
4. AC 110/220V Selector (See Next Page)
5. Pool water sensor
6. Roof sensor
7. Valve #1 Solar system Valve
8. Valve #3 & Valve #4 For Spa Isolation Feature
9. Solar Return water sensor
10. RS-485 Cable to VSF pump

Power specification:

- » 120 VAC, 0.4A 50/60 Hz.
- » 240 VAC, 0.2A 50/60 Hz.

Output

- » (4) X 24 VAC (for valves actuators).
- » (2) X High Voltage isolated contacts
10 A at 120/240 VAC.

Input

- » (3) x 10 K Ohm NTC Temperature sensors.

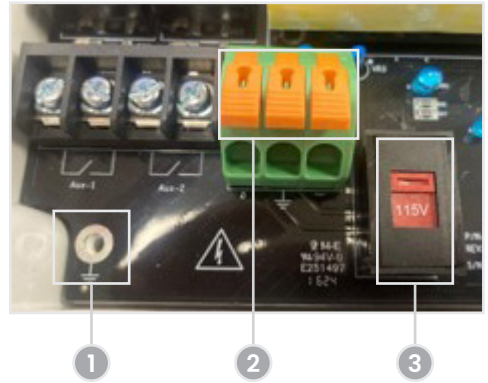
Communication

- » RS-485

Wiring of a SPHERE Pro controller – AC WIRING DIAGRAM

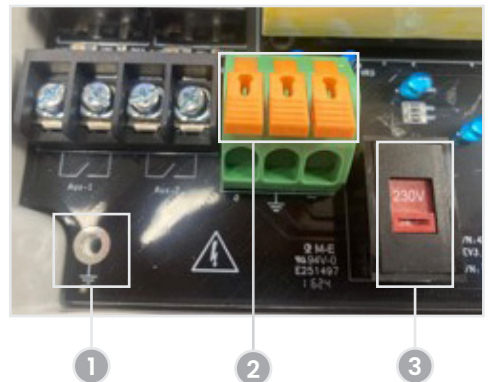
110V AC WIRING

1. Ground screw attachment
2. Power Wire connector
3. Set switch to 115V



220V AC WIRING

1. Ground screw attachment
2. Power Wire connector
3. Set switch to 230V

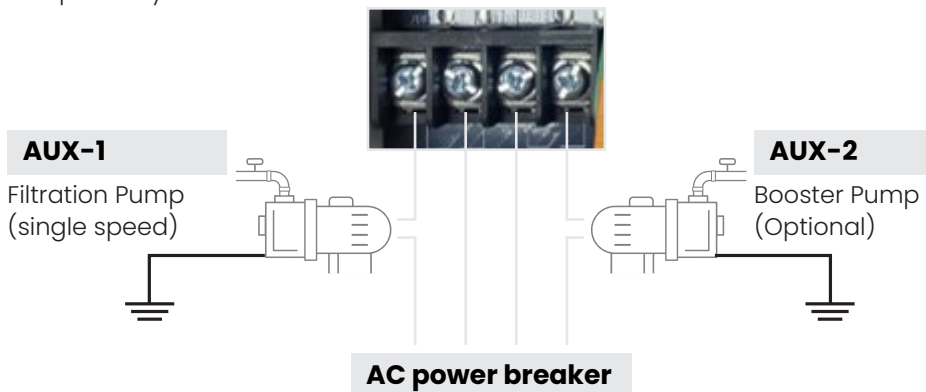


SPHERE Pro controller

Wiring a single speed Filtration pump and a Booster pump (optional)

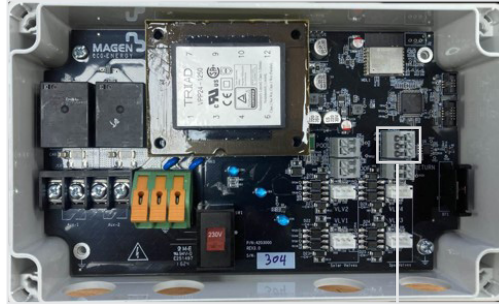


AUX-1 and AUX-2 are dry contact relays for controlling high voltage devices **up to 10 Amp** per relay.

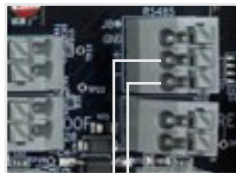


SPHERE Pro controller

Wiring a VSF Pump



The VSF pump is powered directly from the main AC power supply. It is controlled via the RS485 communication cable (supplied with the pump).



(+) yellow wire

(-) green wire

RS-485
Communication
Cable

AC power breaker

VSF Pump

Interacting with a Variable speed pump (PENTAIR – IntelliFlo®)

- » The SPHERE-Pro unit communicates with a VSF pump via the RS485 cable. However, the user **must activate** the “VSF PUMP” feature (see page 11) in order for the unit to take control of the pump. In this mode the pump’s onboard screen and dash will be deactivated.
- » The pump **must be turned on before activating it from the app**. indication light of the “Start\Stop” button should be on.



Installing Conduit and wire to the enclosure

- » Use No. 14 min to No. 6 max AWG for power relay circuits depending on power requirements.
- » Supply circuit must be protected by suitable circuit breaker



For AC input power conductors.
½ NPT Conduit

For low voltage conductors
(temperatures sensors,
valve actuators, RS485
communication cable)

SPHERE PRO

App setup and operation

Download links for My SPHERE App

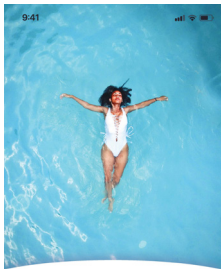
Link to App for IOS:



Link to App for Android:



Registration



Welcome to Your Pool Controlling System

Use solar energy to adjust your desired pool temperature easily.

• • •

Let's get started!

Tap
Let's get started!

9:41

How Would You Like to Use the App?
Choose the one that describes your position

 I'm a pool owner


 I'm a technician


Continue

Tap
pool owner

9:41

How Would You Like to Use the App?
Choose the one that describes your position

 I'm a pool owner


 I'm a technician


Continue

9:41

<

Create an Account

 Continue with Google

 Continue with Apple

Or

Email Address
Enter your email

Continue

Already have an account? [Log In](#)

By Creating an account, I agree to Magen [Terms & Conditions](#) and [Privacy Policy](#).

Choose to continue with your Apple/Google account or enter your e-mail

9:41

< [Skip](#)

Let's Get to Know You!

Personal Info

First Name
Enter first name

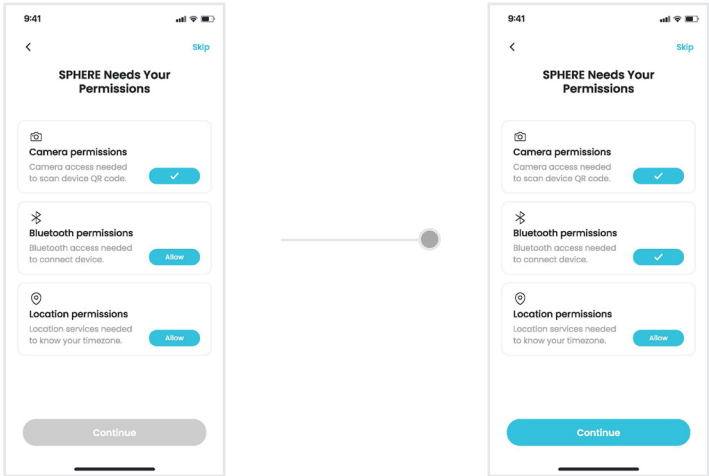
Last Name
Enter last name

Phone Number
+1 Enter phone number

Continue

Pairing the controller unit to your phone

The App will need your permission to access your Camera, Bluetooth and location for easy pairing.

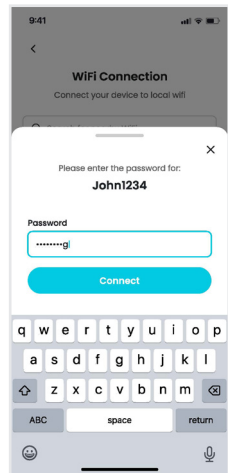
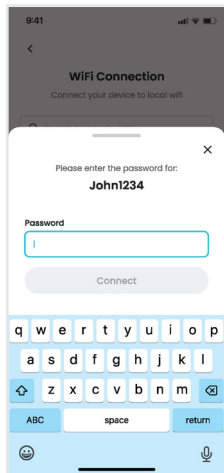
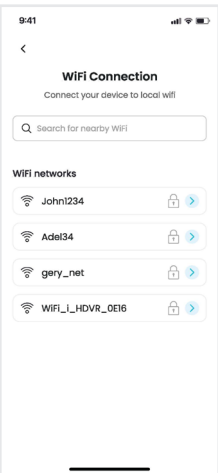


Scan your unit QR code or choose to enter manually

Once the unit is paired to you phone, you will need to connect the unit to your home WIFI network. Stay in close proximity to the controller unit for this step.

If a technician has pre installed your system, continue to setup your WIFI connection.

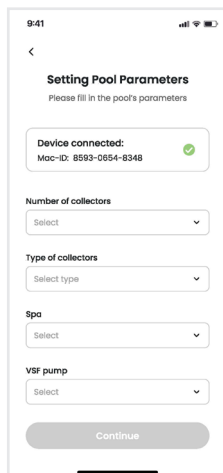
If you are installing the system by your own, the app will ask you to define your solar system before continuing (see next page)



The App is set up and ready to use. See page 21 for operation manual

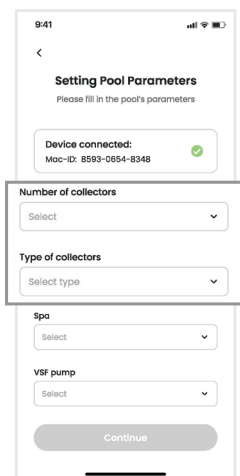
Installing your own system

When installing the system independently, you will need to define the system configuration. **Stay in close proximity to the controller unit for this step.**



Pool location:

The location of the pool will determine the time zone used by the pump's schedule.



The number and type of collectors are required for service and maintenance purposes

Installing your own system

9:41

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Setting Pool Parameters

Please fill in the pool's parameters

Device connected: ✔
Mac-ID: 8593-0654-8348

Number of collectors
3

Type of collectors
SunValue

Spa
Select
Yes
No

Continue

SPA:

If your pool plumbing includes a spa isolation bypass and you have two (2) 3-way valves with 24V AC actuators operating this bypass, you can operate them using the controller. In this case, make sure to activate this option in the Spa menu

9:41

<

Setting Pool Parameters

Please fill in the pool's parameters

Device connected: ✔
Mac-ID: 8593-0654-8348

Number of collectors
3

Type of collectors
SunValue

Spa
Spa mode - Enabled

VSF pump
Select
Yes
No

VSF – Variable Speed Pump:

The SPHERE Pro controller can control a PENTAIR IntelliFlo® VSF pump.

To access the full functionality of the controller, connect the pump's communication cable to the SPHERE Pro controller (see page 11), and select the 'YES' option from the drop-down menu.

***Note – if using a single speed pump, select 'No' in this menu.**

VSF speed settings

Tap on inputs to change speed value:

Filtration speed 45

Solar heating / Cooling speed 22

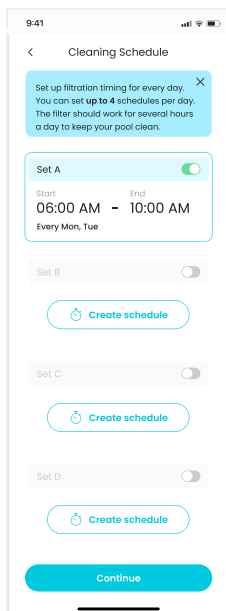
Freeze protect speed 79

Solar hold speed 133

VSF speed setting:

You can change the default speed settings for the four (4) programs. This can also be done at any time through the App's configuration menu.

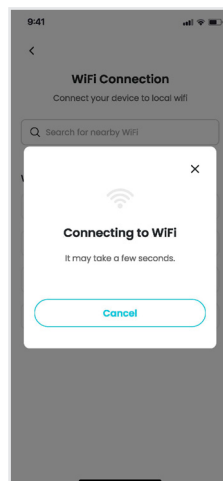
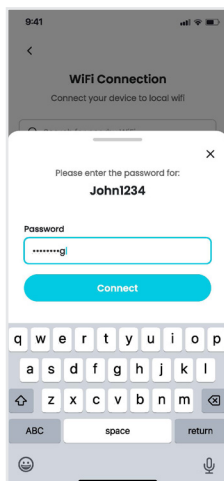
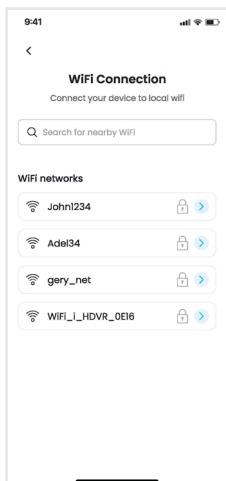
Installing your own system



Cleaning schedule:

You can set up to four (4) schedules for operating your filtration pump. This can also be done at any time through the App's configuration menu. Enter a start time, end time and days of the week.

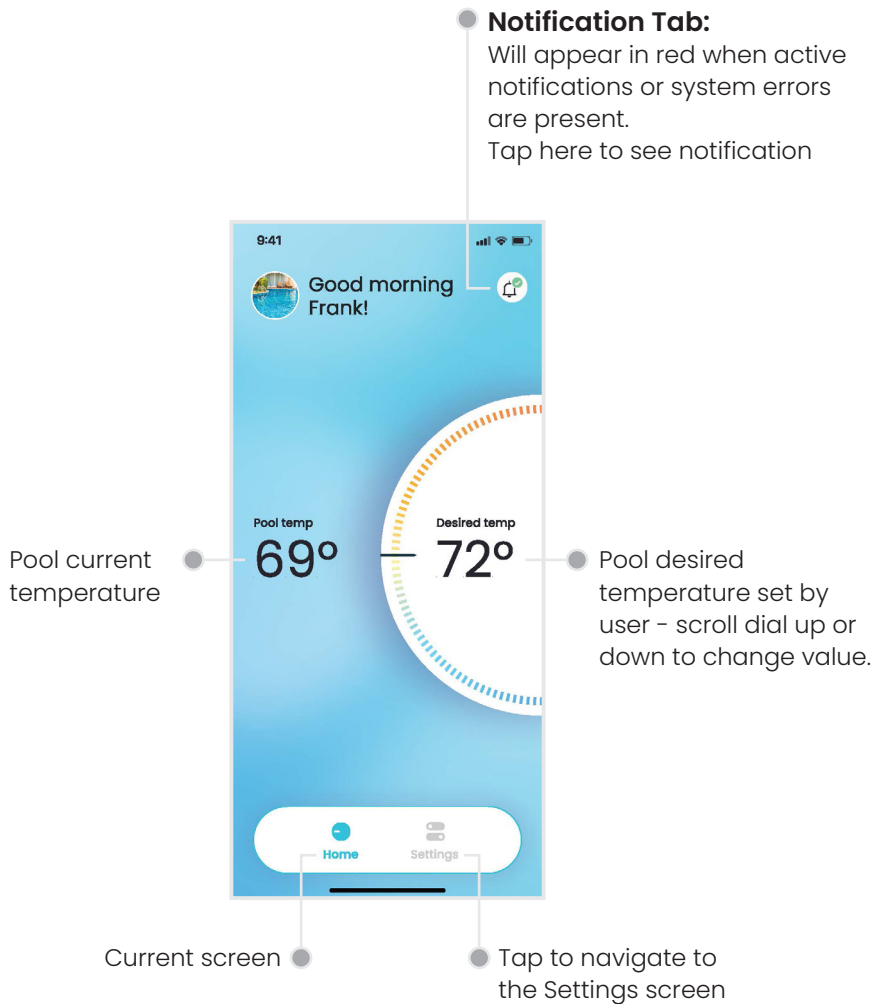
Connect the controller to your home WIFI network:



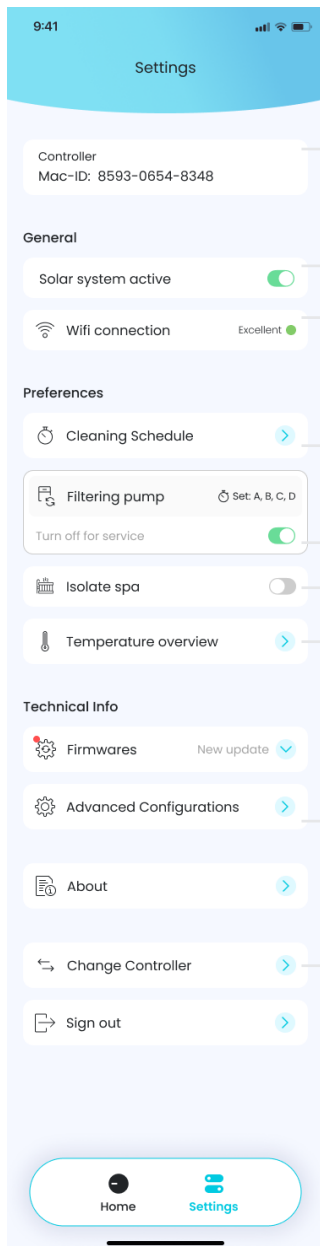
SPHERE PRO

App User's guide

Home screen



Setting screen



Controller ID (MAC address)

When On – solar system will operate automatically according to temperature difference to maintain user's desired temperature.
When Off – solar system is not active.

Controller WIFI signal quality.

Tap here to set up the operating schedule of the filtering pump. (see page 24)

Filtering schedule will appear here. user can turn off **and on each schedule** or change timing.

Tap here to activate Spa isolation mode (see page 27)

Tap here to view all temperature sensors reading.

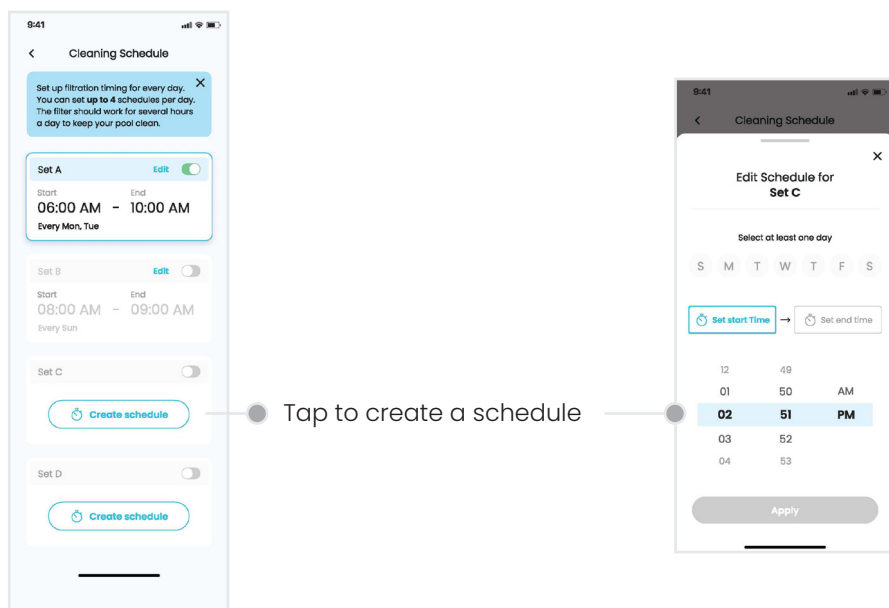
Tap here for Advance configuration menu (see page 26)

Connect to a different controller.

Filtering pump schedule

The SPHERE Pro controller allows the user to operate the pool filtration pump via the app, provided the pump is properly wired and connected to the controller (as illustrated on page 10-11).

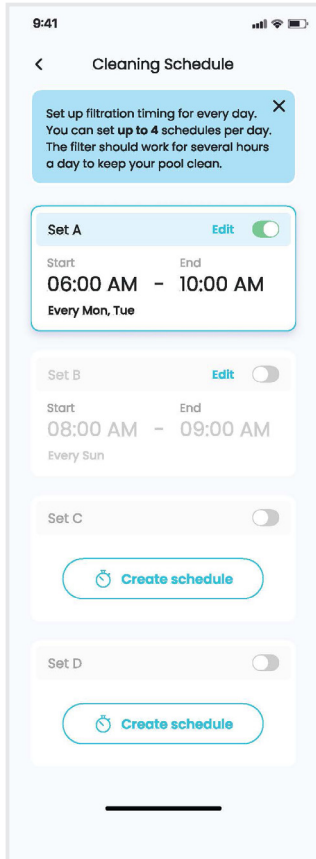
On this screen, the user can configure up to four (4) distinct time slots for automatically turning the filtration pump on and off within a 24-hour period, for each day of the week.



Set the start time, end time, and select the days of the week on which the filtration pump should operate.

Filtering pump schedule (continued)

After configuring the schedules, the user can easily enable or disable each one through the Settings menu.



Schedule status:
Set A is **on**



Schedule status:
Set B is **off**
Time is inputed

Schedule status:
Set C is off
No Time is inputed yet



Schedule status:
Set D is off
No Time is inputed yet

Advance configuration

In this menu, user can access advantaged operating modes:

 **Pump schedule solar override** 

When this is activated – the pump will turn on any time the solar system is activated, regardless of it's scheduled operation.
When this is deactivated – the solar system will engage only if there is solar gain and the pump is activated according to its scheduled timer.



 **Solar hold** 

Only used with a VSF Pump
When this feature is activated and the solar system is engaged – the VSF pump will ramp up to the assigned RPM in program 4. The solar valve will maintain its closed position for 5 minutes in this state. After 5 minutes the valve will open and the pump RPM will continue with program 4 for another 5 minutes, afterwards it will set to the RPM assign to program 2.



This mode is on by default.

Advance configuration (continued)

After configuring the schedules, the user can easily enable or disable each one through the Settings menu.

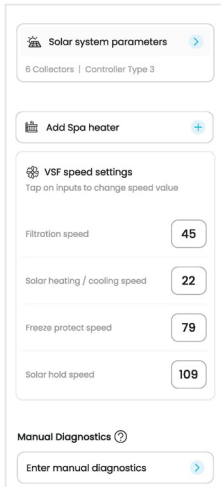
 **Nocturnal cooling** 

The SPHERE-Pro unit can cool the pool by diverting water to the solar collectors during night time when ever the pool's temperature is higher then the desired set point.

 **Freeze control** 

When enabled, this feature will start water circulation thru the solar collectors when ever the roof temperature sensor falls to 40°F (4°C) or below. It will stop circulation when the roof temperature sensor reaches 42°F (6°C) or above.
***NOTE** – It is highly recommended to drain water from the solar collectors when the pool is not in use*

Advance configuration (continued)

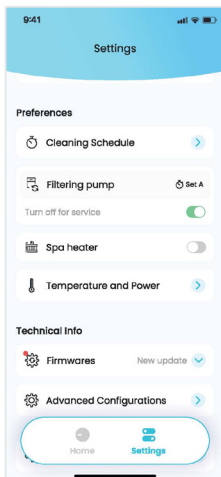


User can **pre set** the operating speeds for the different programs of a VSF pump.

Manual diagnostic allows a technician to operate manually all complement of the solar system and pump.

Spa isolation mode

If your pool plumbing includes a spa isolation bypass and you have two (2) 3-way valves with 24V AC actuators operating this bypass, you can operate them using the controller. In this case, make sure to activate this option in the Spa menu



In the advance configuration menu, see the "Isolate spa" toggle. When active, valve #3 & #4 will turn to their On position and divert all water from the pump to the Spa and thru the solar system when active. When this toggle is off, the water will return to circulating the pool water.



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