

# BlueSpray User Manual

## I. Introduction

BlueSpray is a wifi, web based irrigation controller. BlueSpray allows the user to control, and program irrigation schedules remotely from any computer, tablet, or smart phone with an internet browser. There is no software or app to install.

BlueSpray controller can be used in new instalation or replace any existing irrigation controller. The base BlueSpray controller supports 8 zones or stations. One single BlueSpray controller can support up to 24 (residential) and 128 zones (commmercial) with expander boards.

## II. Installations

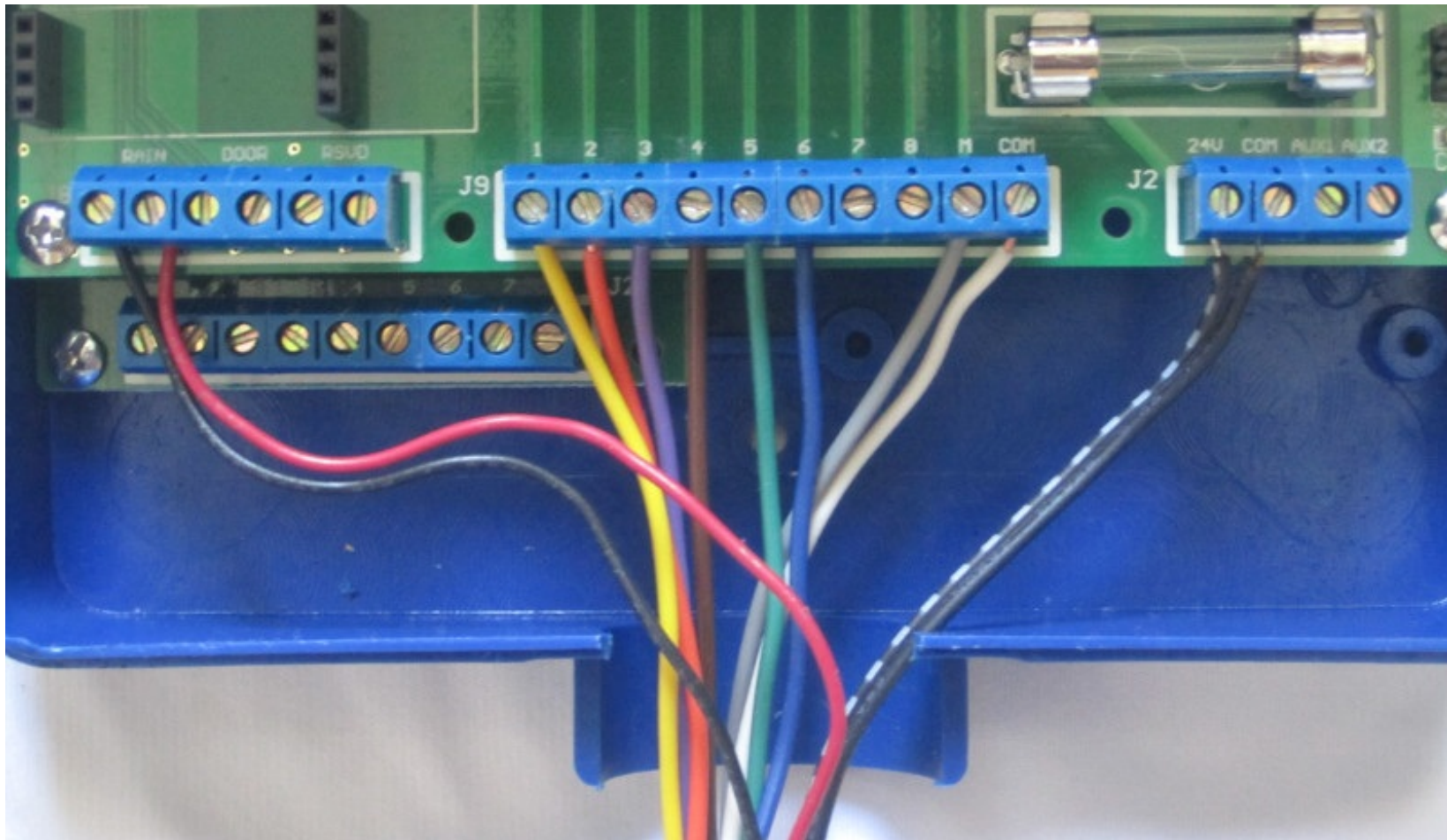
**Note:** BlueSpray controller is designed to be mounted indoor only. Outdoor mounting can be done with proper weather proof case. Please contact us if you require outdoor mount case.

### i. Controller Mounting

1. Mount 2 large screws (provided) into the wall. Use anchor if needed. Leave about 1/8 inch between the screw head and the wall. They should be 5 inches apart. Use a leveler to make sure that they're horizontally leveled
2. Hang BlueSpray controller onto the 2 screws. Once in, the controller should slide down and settle onto the screws.
3. Open the controller access door. Use the 3rd screw to secure the controller in place.

### ii. Controller Wiring

**Note:** A flat screw driver is needed for all wire terminals

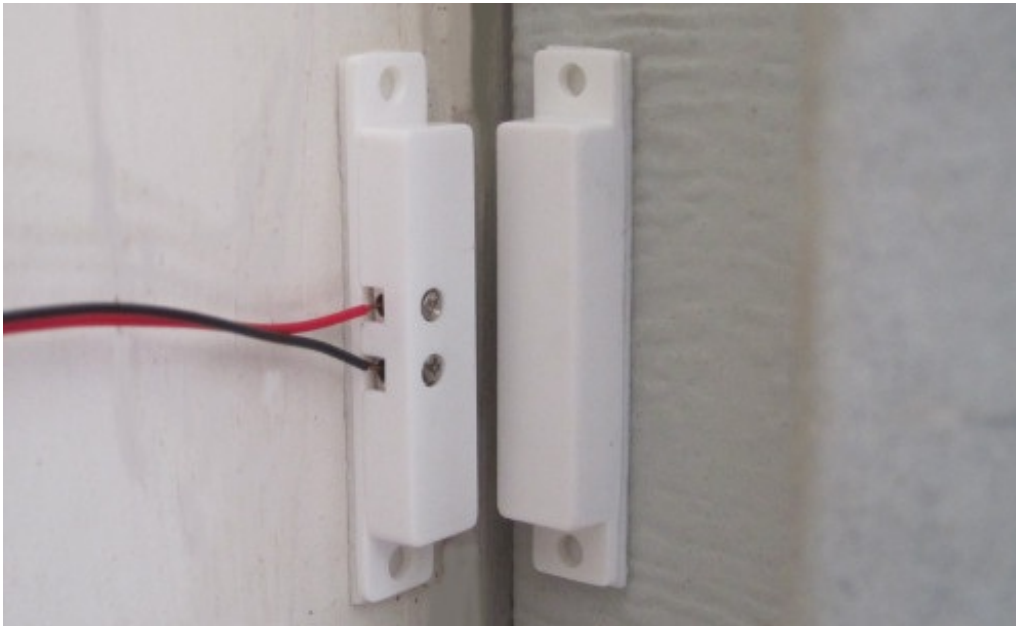


1. Connect valve wires to the zone terminals marked 1 through 8.
  - a. The order of the zones is from left to right, top to bottom.
  - b. If your controller has more than 8 zones, it will have one or more expander boards underneath the main board.
  - c. **Caution:** do not connect your valve wire to the 1st terminal on the expander board! This terminal should already be occupied by a 24 VAC power wire. Use the terminals marked 1 through 8 instead.
2. Connect master valve wire (if applicable) to the terminal marked M
3. Connect common wire to the terminal marked COM
4. Connect sensor wires (rain/door) to the appropriate terminals. Polarity does not matter here.
5. Route all wires through the bottom of the controller and close the access door.
6. Connect power wire from the power supply (supplied) to the 24V and COM terminals.

7. Make sure the reset switch is at the up (NORMAL) position.
8. Plug in the power supply. Note that the green power indicator light should stay on.
9. The controller will boot. You will see that the status (amber) indicator light stays solid for a few seconds. Wait until the status light starts blinking. The controller has booted up. You are now ready to connect to the controller.

### iii. Garage Door Kit Wiring

If you purchased the Garage Door Kit, read on. If not, you can skip this section.

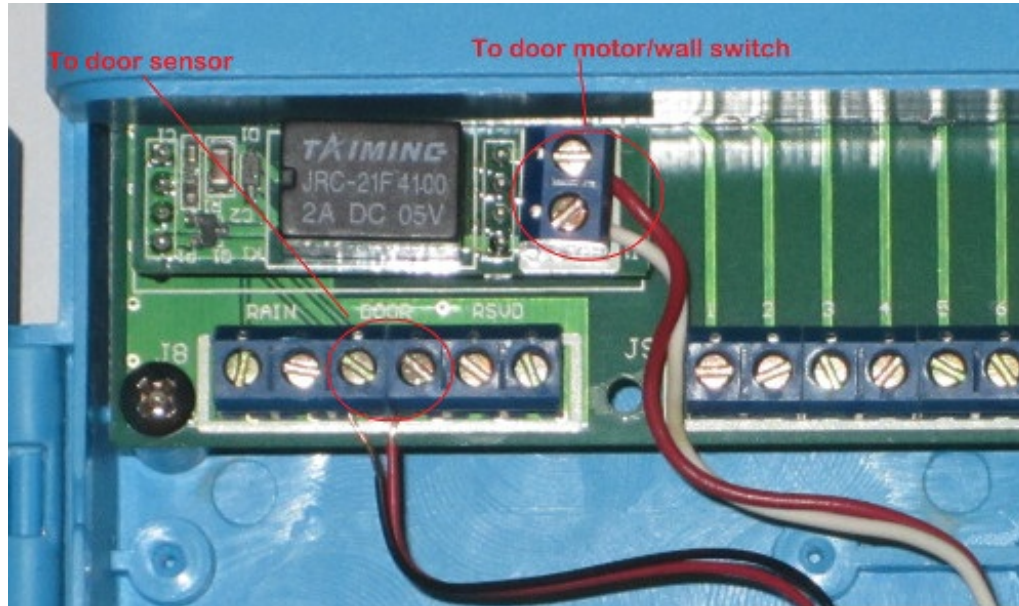


1. Close the garage door. Locate a spot on your garage door frame where you can easily mount the door sensor. The sensor consists of a switch with wire terminal and a magnet. The piece with the wire terminal is mounted on the garage door frame. The magnet piece is mounted on the garage door it self, to be aligned with the wire terminal piece.

**Note:** The door sensor pieces must be no further than 1 inch apart when the door is closed. Once secured, try open and close the garage door to make sure that the sensor doesn't get knocked out of its place.

2. Power the controller off by removing the AC adapter out of the AC socket. Connect the 2 wire from the door sensor to the "Door" sensor terminal on the controller

3. Connect 2 wire from the Door Switch relay's terminal (located on the controller) to either the garage door switch or the terminals on the garage door motor itself



4. Power on the controller. Connect to the controller UI. Click on "Settings" => "Sensors". Click on either one of the lock buttons of the Door Sensor field to select either "Close at" or "Close after" option and click on "Save". You should see a Door Sensor status on the Status Panel.
5. Test the Door Switch relay by clicking on the garage door button on the Status Panel and observe if your garage door opens/closes on demand.
6. Test the Door Switch relay by clicking on the garage door button on the Status Panel and observe if your garage door opens/closes on demand.

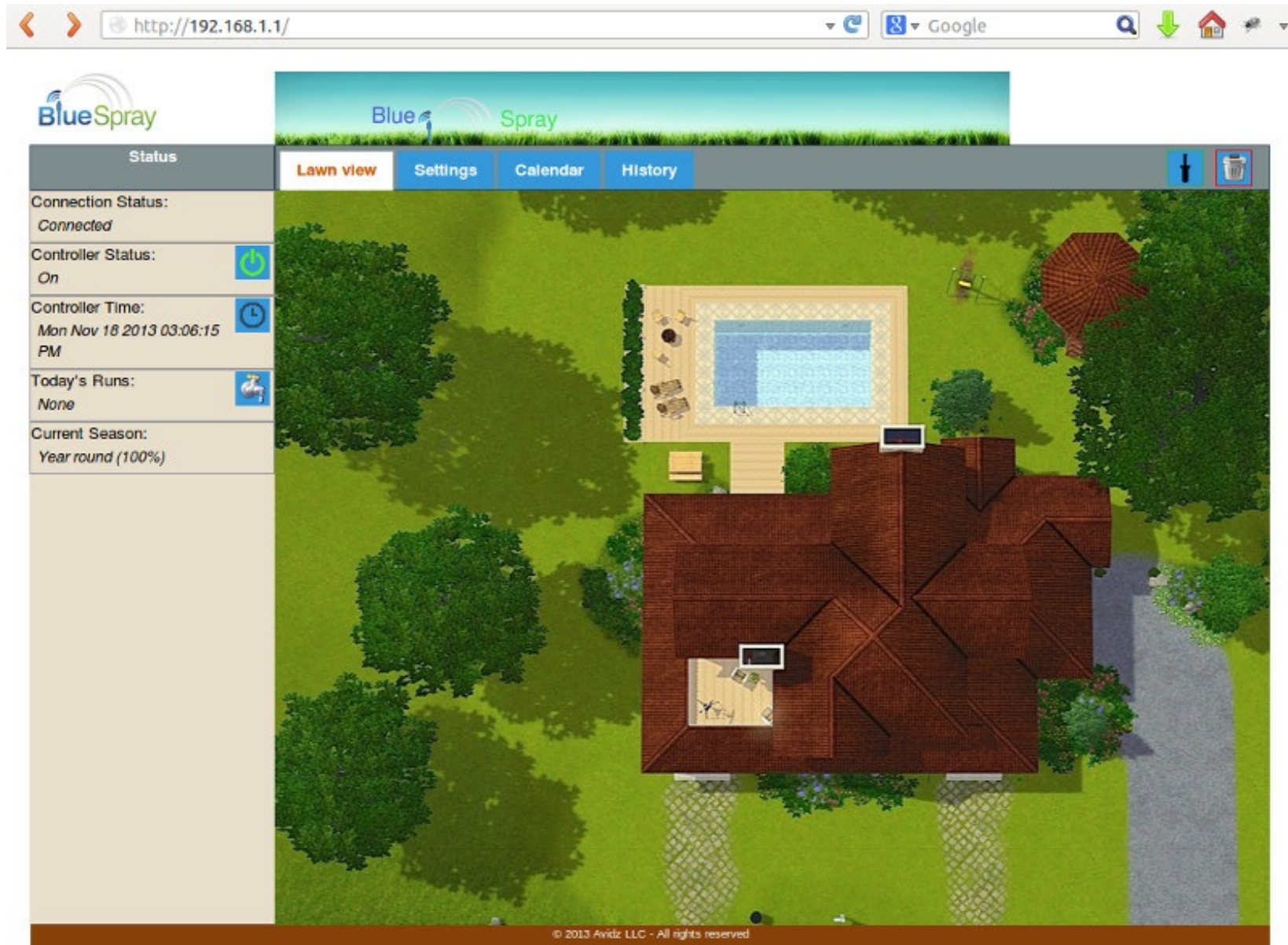
### III. BlueSpray GUI

#### i. Connect to BlueSpray

*You can use a computer, laptop (with wifi) or tablet to perform these tasks. For the first time, a computer or laptop is recommended.*

1. From your computer, go to wireless settings. Find bluespray network and connect to it. There is no password.
2. Once connected to bluespray (you will not have access to the internet temporarily), enter **http://192.168.1.1** in your

browser. You should now be able to see the BlueSpray UI.



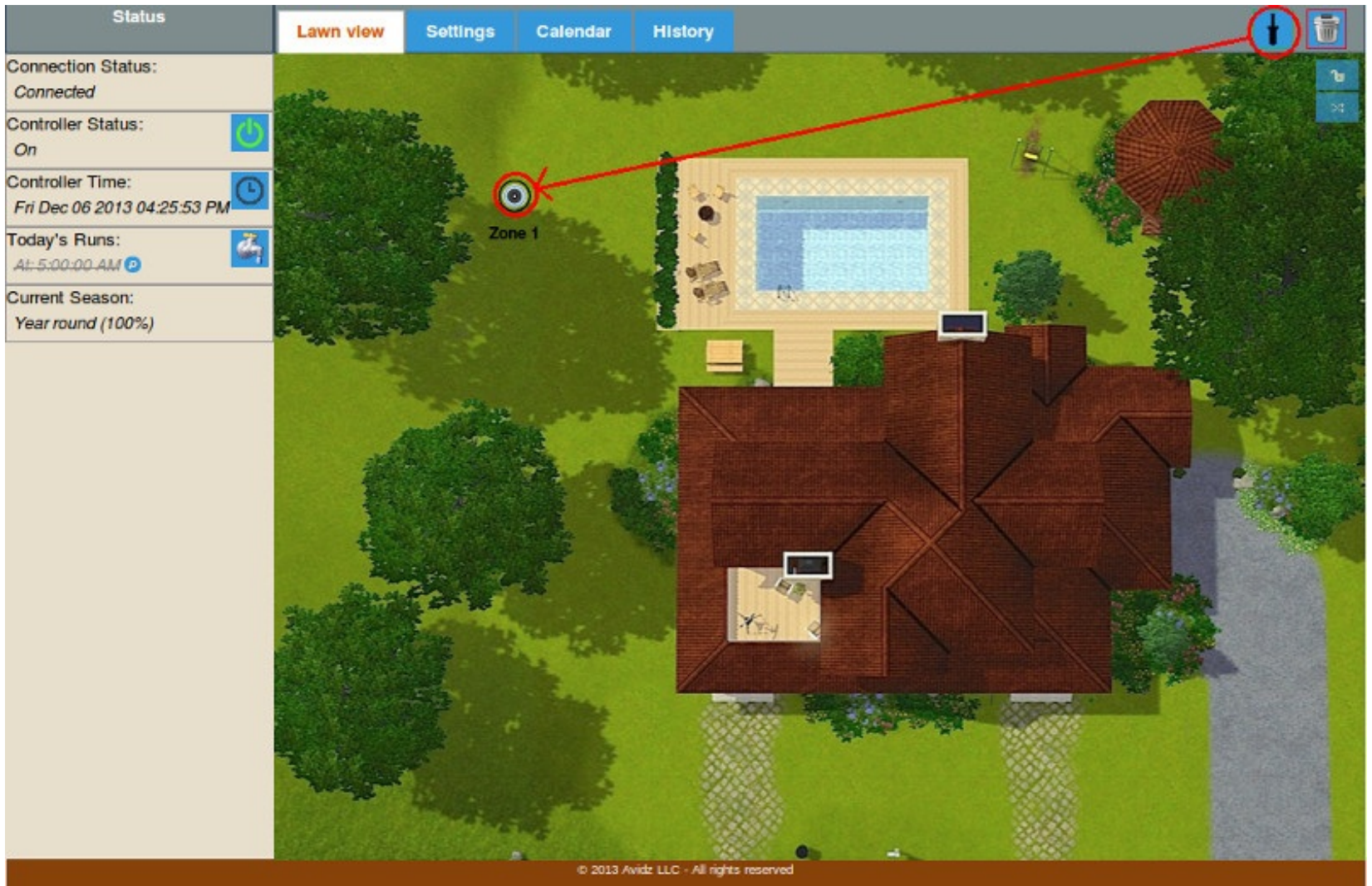
## ii. Setup/Configurations

## 1. Zones (stations)

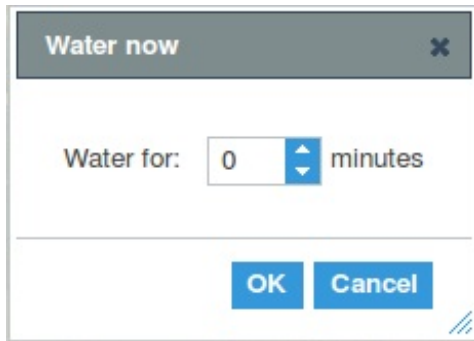
A zone (or station) is a collection of sprinkler heads grouped together to water a part of your lawn. A typical irrigation system has multiple zones.

It's very simple and intuitive to configure zones with BlueSpray UI. Click "Lawn View" tab. Click on the sprinkler head icon from the upper right corner of the UI and drag it onto the lawn. You can place it to the approximate location of where the real zone is on your property. The zones will be named in the order that they're added.

If you've added more zones than you need, simply drag the zone icon to the trash can icon on the upper right corner of the lawn. When the trash can background color turns red, drop the icon and it will be deleted from the lawn.



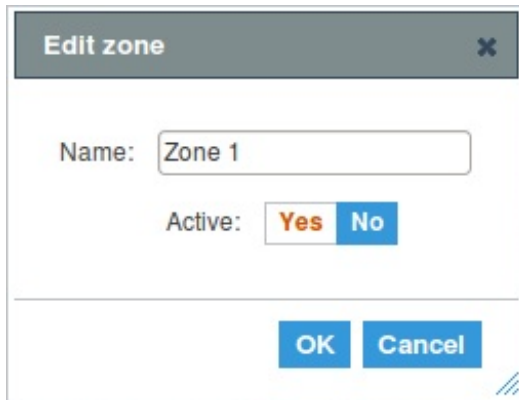
You can water a particular zone immediately by clicking on the zone icon on the lawn. A popup dialog will appear.



A dialog box titled "Water now" with a close button (X) in the top right corner. It contains a label "Water for:" followed by a numeric input field showing "0" and a spinner control with up and down arrows, and the word "minutes" to the right. At the bottom, there are two buttons: "OK" and "Cancel".


**Water now:** Enter the number of minutes you wish to water this zone.


You can rename the zone by right-clicking (press and hold for tablet) on the zone icon on the lawn. A popup dialog will appear.



A dialog box titled "Edit zone" with a close button (X) in the top right corner. It contains a label "Name:" followed by a text input field containing "Zone 1". Below that is a label "Active:" followed by two buttons: "Yes" (highlighted in orange) and "No" (highlighted in blue). At the bottom, there are two buttons: "OK" and "Cancel".

- **Name:** Enter the name you wish to call this zone.
- **Active:** Enable/disable the zone. If "No" is selected, the zone is disabled. It will not water until "Yes" is selected. You can use this feature to prevent a zone from watering in the event that one of the heads might experience some problem for example.

Sometimes when using a tablet, you might inadvertently drag a zone when you tab on it. To prevent inadvertent dragging, just click on the  button on the upper right corner of the lawn. Toggling it will enable/disable dragging.

BlueSpay will water all zones by the order that they are added. If you would like to run them in a different order, click on the  icon on upper right corner of the lawn. A popup dialog will appear.





You can re-arrange the order by dragging the zones in the order that you want them to run. No need to re-wire the controller.

## 2. Programs

Click "Settings" tab. Click the "Programs" tab. A program is a set of run times of all the zones. You can add as many program as you like.

## Program Settings

Program Name:

Run times (minutes)

Zone 1:

Zone 2:

Zone 3:

Zone 4:

Zone 5:

Zone 6:

+ New

🗑 Delete

💾 Save

⌂ Cancel

1 of 1



Click on the "New" button to create a new program. You can name your own program and enter the number of minutes you wish to program your zone to water. It is required that all program names are unique to avoid confusion.

- **Program Name:** Enter the name you wish to call this program.
- **Run times:** Number of minutes to water for each zone.

Once you're satisfied with your input, click on "Save" to commit your changes. BlueSpray does not limit the number of programs you can have. You can create as many programs as you like. Click on "Save" to save all of your changes.

### 3. **Seasons**

Click "Settings" tab. Click the "Seasons" tab. You can setup different seasons or period of times to tailor to your watering needs.

## Season Settings

Season Name:

From Date:


To Date:

 Percentage:  100%

+ New

 Delete

 Save

 Cancel

1 of 1



- **Season Name:** Enter the name you wish to call this season.
- **From date:** The date the season begins.
- **To date:** The date the season ends.
- **Percentage:** Water budget for this season. The percentage applies to the run time configured. For example, if you set to run 100% for the summer and 50% for the fall, and each zone to run for 10 minutes, then the controller will run the full 10 minutes in the summer and only 5 minutes in the fall season. A percentage ending with a 5 will be

rounded up i.e. 55% means that it will run for 6 minutes.

#### 4. Schedules

Click "Settings" tab. Click the "Schedules" tab. You can start times and watering frequency here.

**Schedule Settings**

Run Name:

Start Time:

Run Program:

*i* Apply to Season:

Active:

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Run Interval

Run on:  Even days  
 Odd days  
  Every day  
 Week days

Sun  Mon  Tue  Wed  Thu  Fri  Sat

*i* Effective on:

+ New 🗑 Delete 💾 Save 🚫 Cancel

1 of 1 << >>

- **Run Name:** Enter the name you wish to call this watering run. You should enter unique names to avoid confusion.

- **Start Time:** Enter the time of day when you want to start watering.
- **Run Program:** Select a program that you want to start at this time.
- **Apply to Season:** Select a season that you want this run to run in. By default, a run is applied to all seasons or year round.
- **Active:** Select "Yes" to keep this run active. A "No" selection means this run will not run at all.
- **Run Interval:** Configure how often you want to use this run
  1. **Even days:** Run on even days of the month only.
  2. **Odd days:** Run on odd days of the month only.
  3. **Every X days:** Run on every X number of days where X is a number.
  4. **Weekdays:** Run on certain day(s) of the week.
- **Effective on:** The date this run starts to take effect. This setting is useful for "Every X days" run. For example, if you wish to set up a run every 2 weeks but must be from a Tuesday, you would set this run to skip every 13 days, to be effective on a Tuesday.

## 5. Sensors

Click "Settings" tab. Click the "Sensors" tab. If you installed a rain and/or door sensor, you can configure it here.

**Sensor Settings**

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Rain Sensor

**i** Sensor type: NO NC ↺

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Door Sensor

**i** Close after (minutes): 10 ↑ ↓ ↺

**i** Close at: 12:00 AM ↑ ↓ 🔒

📄 Save 🚫 Cancel

Please consult your rain sensor user manual to see what type of sensor you have. Entering the wrong information may affect the operation of your BlueSpray controller.

- **Rain Sensor type:** Select either one of:
  1. **NO:** Normally Opened rain sensor
  2. **NC:** Normally Closed rain sensor.
- **Door Sensor:** You can select either one of:

1. **Close after:** Close the door automatically X minutes has past since it opens.
2. **Close at:** At this time of day, close the door automatically if it is opened

**Note:** When the controller closes the door, and if the door remains opened for any reason, the controller will attempt to close it again and again until it closes. The time elapsed between tries is the same number of minutes for "Close after", and one minute if "Close at" is configured.

## 6. Operations

Click "Settings" tab. Click the "Operations" tab. Configure BlueSpray controller behavior.



## Operation Settings

### Controller Settings

**i** Master Valve:  Yes  No

Delay watering (days):

**i** Bypass Rain Sensor:  Yes  No

**i** Stack runs:  Yes  No

**i** Heartbeat interval (hours):

### Lawn Settings

**i** Lawn picture (URL):

**i** Zone text color:

- **Master Valve:** Select "Yes" if you have a master valve installed.
- **Delay watering:** Temporarily suspends all watering for X number of days. The controller will count down this value each day until it reaches 0, then all scheduled runs will resume as normal. While in delay mode, you still can water manually.
- **Bypass Rain Sensor:** In the event that the rain sensor malfunction or not operating properly, you can bypass the rain sensor reading and resume all scheduled runs.

- **Stack runs:** In Stack mode, overlapping runs will be rescheduled to be run sequentially. Otherwise, they will be run in parallel. Note that if you run concurrent runs, you may not have enough pressure to water your lawn properly. Residential system should say yes (stack) here.
- **Lawn picture:** Change the lawn picture. If you don't like the default picture lawn, you can change it here. The picture must be in variant of 4x3 aspect ratio and at least 800 pixels wide and 600 pixels in height. This must be a URL of the hosted picture. There are many sources where you can get the lawn pictures from.

1. From our collection of home images:

<http://www.bluespray.net/lawns/>

2. Take an aerial view picture of your own property (drone?)
3. Take a snap shot of google earth or screen shot of google map.

*You must host the image yourself. There are many picture hosting service on the internet (facebook, google+, flickr, etc.).*

- **Zone text color:** If the default text color (black) of the zone does not stand out in your lawn picture, you can change it here.

## 7. Weather

Click "Settings" tab. Click the "Weather" tab. Cancel water runs based on weather forecast.

**Note:** your controller must be running in "Internet" mode and has access to the internet. Also, you must register your controller online in order to activate this feature.

If your controller has not been registered, you will see a "Register" button on this screen. Click the "Register" button and a registration popup will appear. Registering your controller with us will enable additional features such as:

1. Weather forecast configuration
2. Access your controller remotely through our web site without having to set up DNS.



## BlueSpray Controller Registration

### Controller location

Address

*Required.*

City

*Required.*

State

*Required.*

Zipcode

*Required.*

### Account Info

Use existing account:

Name

*Required. First, last*

E-mail

*Required.*

Password

*Required. At least 5 characters: letters, numbers and '\_'*

Confirm Password

*Required. Confirm password*

Submit

Close

- **Controller location:** Enter your address. We need this information to extract weather data from NOA
- **Account Info:** Enter your name, email and a password to create an account with BlueSpray. You will need this information to log into your BlueSpray account. If you already have created an account, just click on the "Use

existing account" box and enter your account info (email and password)

Once registered, you should be able to edit the Weather Settings

## Weather Settings

**i** Do not water if:

Chance of rain is at least:  %

**i** Extend rain forecast to:  hr(s)

Temperature is less than:  °F

Wind speed is greater than:  mph

 Save

 Cancel

- **Chance of rain is at least:** Do not water if there is a good chance of rain.
- **Extend rain forecast to:** Look X number of hours further into the forecast.

- **Temperature is less than:** Do not water if it's too cold.
- **Wind speed is greater than:** Do not water if it's too windy.

**Note:** Our forecast weather is obtained from NOAA. It is only a forecast based on zipcode and may not be accurate or reflect the true weather condition at your property. Use it as a guideline only. BlueSpray is not responsible for the accuracy of the forecast.

## 8. **System**

Click "Settings" tab. Click the "System" tab. Configure system and security information.


### System Settings

Controller name:

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Wifi Settings

*i* Operating Mode:

Network SSID:  

Encryption:

Key:

---

Time Settings

Time zone:

NTP servers:

---

Security Settings

Enable login:  Yes  No

Login Name:

- **Controller Name:** Name you want your controller to appear.
- **Operating Mode:** Select either "Stand alone" or "Internet" mode.
- **Network SSID:** Select the SSID of the wireless network to join. If in "Stand alone" mode, the SSID of the controller's wifi SSID.
- **Encryption:** Select the type of encryption of the wireless network.
- **Key:** Enter the key or passphrase of the wireless network.

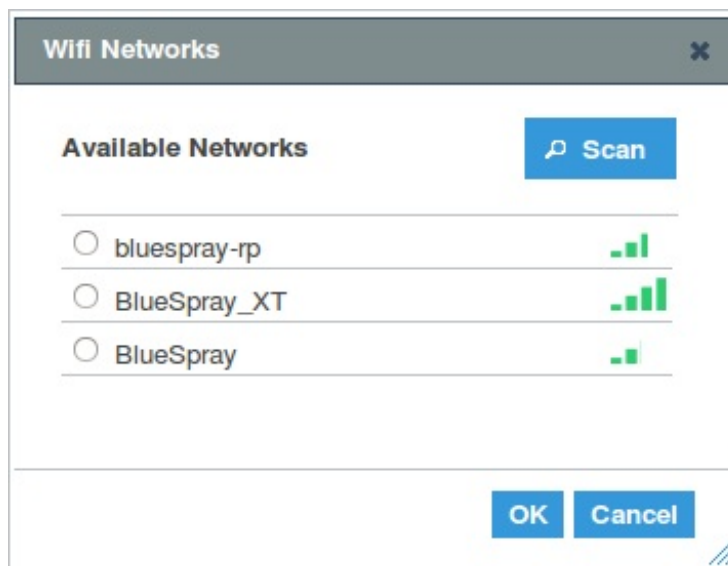
- **Time zone:** Select the time zone of your property's location.
- **NTP servers:** Enter the time servers so that the controller can get time from. It is best to leave these as is unless you know what you're doing.

**Note:** In "Internet mode", the controller will obtain system time from the internet and automatically adjusts for Daylight Saving time. In "Stand Alone" mode, the controller will automatically sync to the browser of the device that you're using to connect. This event is done once when the controller boots up but can't get on the internet. After syncing, the controller will run on its own. In the event of power loss, the controller's clock will need to be synced. Just connect to the controller via any browser will do the job. When you see the orange LED on the controller blinking, it means you'd need to sync.

- **Enable login:** Select "Yes" if you would like to restrict access to your controller.
- **Login Name:** If login is enabled, enter the login or username that you want to login as.
- **Password:** If login is enabled, enter the password for the login name above.

- **Connect the controller to the internet:**

Click on the  button. A "Wifi Networks" popup will appear and the controller will scan for nearby Wifi networks.



Clicking on the "Scan" button and the controller will scan again. Otherwise, select your home wireless network and click "OK". Your network SSID will be entered automatically.

**Note:** Please make sure that you have good wifi signal where the controller is located before performing this task. If your wifi signal is not strong, we recommend using a better router or a range extender.

## 9. Administration

Click "Settings" tab. Click the "Administration" tab. This is where you perform system administrative tasks.

**Maintenance**

Firmware Version: v1.1

**Firmware update**

Firmware file:  No file selected.

- **Firmware update:** We will periodically provide new firmware image to fix bugs or add new features. To perform firmware update, just download the firmware image from our support website:





<http://www.bluespray.net/support.html>















Click on the "latest firmware" link under the "Firmware Update" section and save it to your computer. Then upload the firmware image to the controller. The process should take about two minutes. At this time, do not unplug the power from our controller. It is recommended that you perform this task using a computer.



- **Restart Controller:** Reboot the controller.


### iii. **Calendar View**

It is useful to see if and when your programs run. You can take a peek of future (next 7 days) scheduled runs here.

Lawn view Settings **Calendar** History  

	Tue 11/19	Wed 11/20	Thu 11/21	Fri 11/22	Sat 11/23	Sun 11/24	Mon 11/25
12am							
1am							
2am							
3am							
4am							
5am							
6am							
7am	7:00-7:18  	7:00-7:18  	7:00-7:18  	7:00-7:18  	7:00-7:18  	7:00-7:18  	7:00-7:18  
8am							
9am							
10am							
11am							
12pm							
1pm							
2pm							
3pm							

From Tue 11/19 to Mon 11/25  

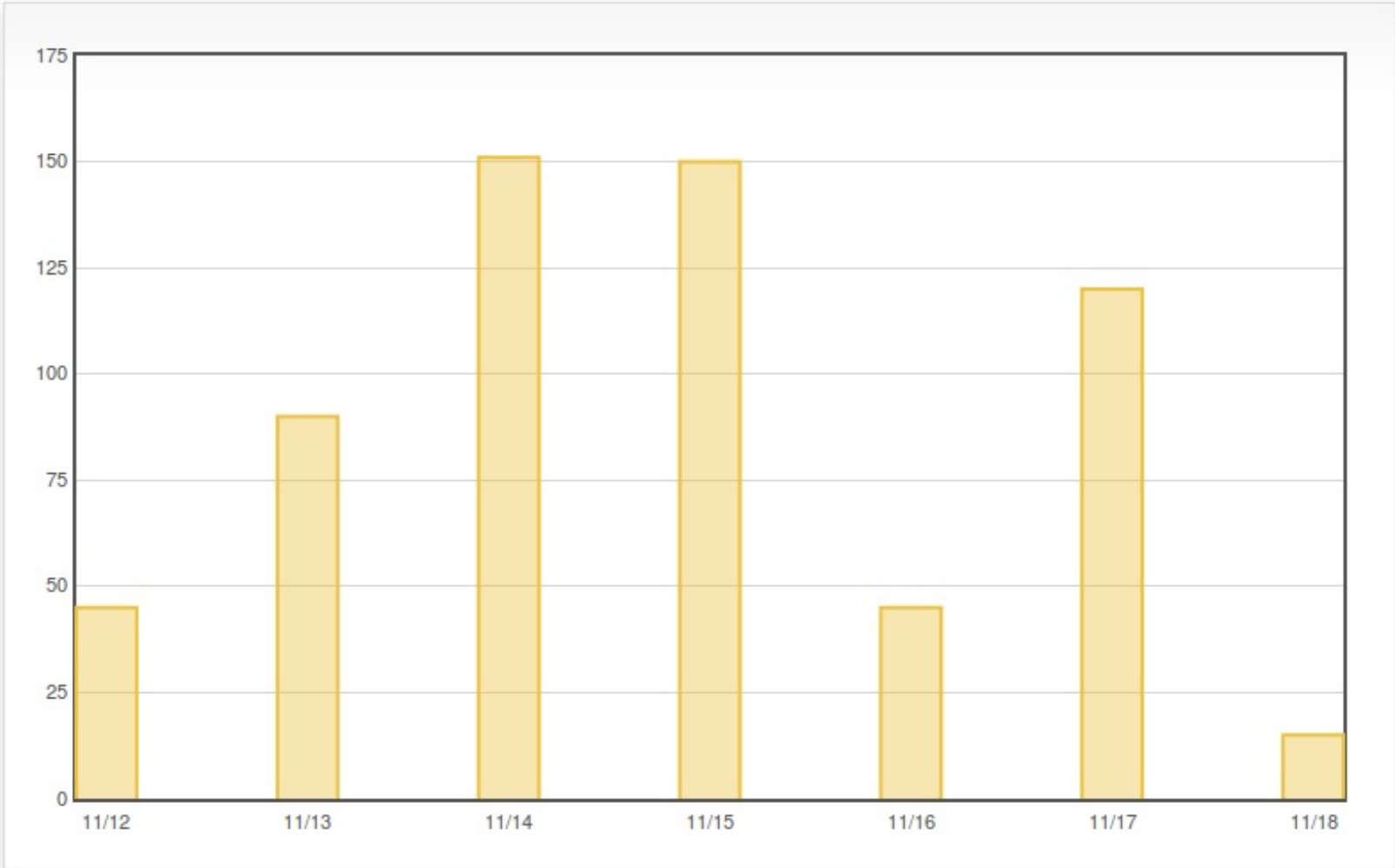
Click on the  button to advance another 7 days.

#### iv. **History Report**

BlueSpray controller records and stores all run times for up to one year. Use this screen to track your water usage. You can view your water history for the "Past 7 days", or "Past 30 days", or "Last week", or "Last month". The left column represents the number of minutes your controller waters each day.

Historical data is stored locally on the controller for up to one year's worth of data.

Show History for: Past 7 days



v. Status Panel



Status	
Connection Status: <i>Connected</i>	
Controller Status: <i>On</i>	
Controller Time: <i>Mon Nov 18 2013 04:41:40 PM</i>	
Today's Runs: <del>At: 5:31:00 AM</del>  <del>At: 9:03:00 AM</del>  <del>At: 10:00:00 AM</del>  At: 4:41:00 PM  	
Current Season: <i>Winter (20%)</i>	
Rain Sensor: <i>Inactive</i>	
Door Sensor: <i>Closed</i>	

- **Connection Status:** Shows whether your browser is connectd to the controller.
- **Controller Status:**
  - On: The controller is on and operating normally.
  - Standby: The controller is on standby. All watering activities are suspended indefinitely.
  - Delayed: The controller is on. All watering activities are suspended temporarily.

**Note:** Clicking on the Power button will toggle the controller to either on or standby. The delayed state is entered when a rain sensor is installed and is active or when manual delay is set.


- **Controller's Time:** Shows current controller time.


**Note:** Clicking on the Sync button will synchronize the controller's time to your browser's time. Time synchronization is done automatically. You seldom need to do this.

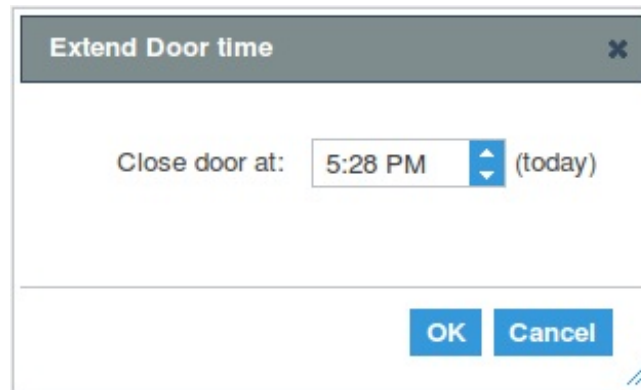
- **Today's Runs:** Shows runs that are scheduled for today. Click on the  button will show you the details of the run. Click on the  button will cancel the run.
  - Grey color: not yet run.
  - Green color: currently running.
  - ~~Crossed out grey color~~: already ran.
  - ~~Crossed out red color~~: cancelled run.

**Note:** To start a manual run, click on the faucet icon.

- **Current Season:** Shows current season and water budget for this season.
- **Rain Sensor:** Shows current status of the rain sensor. This panel only shows if you have configured a rain sensor.
  - Inactive: the rain sensor is "dry".
  - Active: the rain sensor is "wet" or triggered.
- **Door Sensor:** Shows current status of the door sensor. This panel only shows if you have configured a door sensor.

**Note:** Clicking on the  will open/close the door manually. When opened you will see an additional button. Click this button to change the time you want to close the door. When the

door is opened, the panel will show the time that the door is scheduled to close. If you wish to change the close time i.e. to buy more time, click on the  button, a "Extend Door time" popup will appear.



**Close door at:** The time you wish to close the door (effective on current day only).

## IV. Indicators

### i. LED indicators

There are 3 status LEDs on the left side of the controller.

- **Green:** Power status. This LED should always be lit when there is power to the controller
- **Blue:** Data status. This LED will blink when it communicates with another wifi device
- **Amber:**
  - Solid: The controller is booting.
  - Blink: Attention is needed. The controller's time is not synced. If in "Stand Alone" mode, just connect to the controller and time will be synced automatically. If in "Internet" mode, the controller cannot get the time from the internet, possibly not able to connect to your wireless router.
  - Off: The controller is operating normally.

### ii. Reset switch

The slide switch is located under the status LEDs. There are 2 positions that the switch can be in.

- **Up:** NORMAL mode.
- **Down:** SERVICE mode. When the switch is at the "down" position, the controller will go into "Service" mode after 30 seconds has elapsed. In "Service" mode, the controller temporarily sets itself to "Stand Alone" mode with SSID bluespray,

no encryption, no passphrase as it just comes out of the box. This allows any one (service technician) to access it from his or her mobile device and set "manual" runs to turn on valves only. He/she cannot make any modification to any of the settings. When the switch goes back to the "up position from "Service" mode, the controller will go back the NORMAL mode again.

- **Reset:** Reset to DEFAULT mode. When the switch slides to the "down" position and then "up" again in less than 30 seconds, the controller will reset itself to DEFAULT mode, as in default network settings only. This mode helps the user to find the controller again in the case he/she may have input the wrong network wifi settings or the router's wifi info might have changed or lost. In this mode, the user can locate the controller again.

## V. Troubleshooting

Symptom	Remedy
Can't find bluespray	<ol style="list-style-type: none"> <li>1. Check to see if the controller is on. The Green LED should be on.</li> <li>2. Check to see if the controller has booted. If all 3 LEDs are stuck on all the time, contact support.</li> </ol>
Zone does not water	<ol style="list-style-type: none"> <li>1. Check your wiring. Make sure they're not loose.</li> <li>2. If you have a Master Valve, make sure you set Master Valve to "Yes" in Setting-&gt;Operations.</li> <li>3. Make sure the controller status is "On". If it's in "Standby", click on the power button. If it's in "Delay" check your rain sensor configuration.</li> </ol>
Can't find controller in "Internet" mode.	<ol style="list-style-type: none"> <li>1. Check your wifi range. If the signal is weak at the controller, consider using a wifi range extender.</li> <li>2. You may have entered the wrong wifi info (passphrase). Set the controller to DEFAULT mode and re-configure the network settings.</li> </ol>
Can't access the controller from the internet.	<ol style="list-style-type: none"> <li>1. Did you set up Port Forwarding correctly?</li> <li>2. If your controller changes its public IP address too often, change the "Heartbeat" interval to a lower number</li> </ol>
The controller does not water as scheduled.	<ol style="list-style-type: none"> <li>1. Check your program, schedule and season settings. Also, use "Calendar" view to see when the controller will water to get an idea how your schedules are laid out.</li> </ol>

## VI. Warranty

### Warranty and Disclaimer

Avidz LLC warrants to the original purchaser of product that it will be free from defect in material or workmanship under normal intended use for a period of 1 year from the installation date. This limited warranty is non-transferable and limited to repair or replacement of product, at the option of Avidz LLC. The warranty is not extended by repair or replacement of product. This is the only

warranty applicable to product. The duration of any implied warranty applicable to product is limited to the 1 year duration of this express warranty.

**Limitations to Liability** To the fullest extent allowed by law, the aforementioned warranty and remedies are exclusive and in lieu of all other terms, warranties, or conditions, express or implied. This limited warranty does not apply to conditions resulting from failure to follow directions, improper or unsafe installation or use, modification, negligence, hazard, accident, or the like. Further, to the fullest extent allowed by law, Avidz LLC also excludes for itself and its suppliers any liability whether based in tort or contract (including negligence) for property damage of any kind, for monetary loss of any kind, or any other damage, harm, or loss from use of this product and further limits its liability to repair, replacement, or refund of the original purchase price paid, at the option of Avidz LLC.