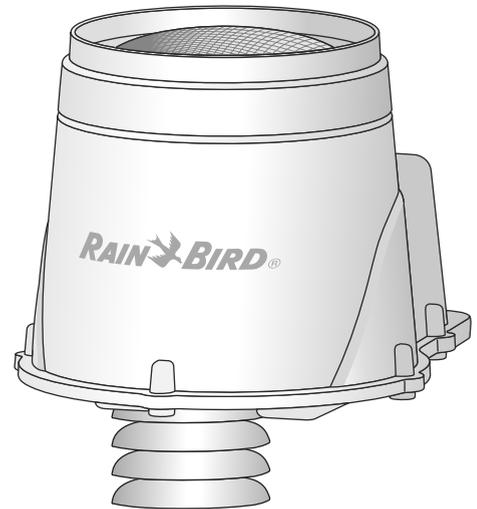




ESP-SMT Smart Modular Control System

Operation Guide Addendum and Frequently Asked Questions





This document is an updated addendum to the Installation and Operation Guide that came with your Rain Bird ESP-SMT Smart Modular Control System. The addendum describes some new and important features.

Also included is a Frequently Asked Questions section that may help you better understand some of the unique functions of your controller, allowing you to get the most out of your ESP-SMT.

Set Allowed Watering Windows

You must set specific time periods in which irrigation can occur on the previously set Allowed Watering Days.

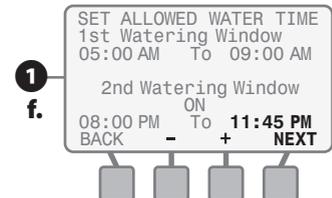
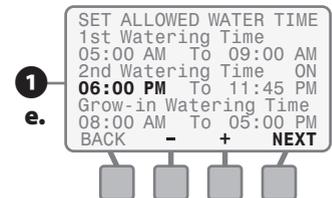
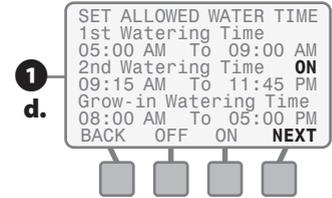
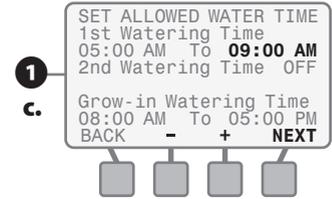
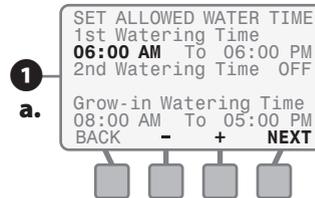
- 1 When the SET ALLOWED WATER
 - a. TIME screen is displayed the **06:00 AM** is blinking under the 1st Watering Window text that is displayed on the screen
 - b. Press the **- or +** button(s) to set the time in which the irrigation schedule is allowed to begin. Once the desired time is reached, press the **NEXT** button.
 - c. The ending time of the 1st Watering Window will begin to blink. Press the **- or +** button(s) to set the time at which irrigation must end. Once the desired end time is reached, press the **NEXT** button.
 - d. If a 2nd Watering Window is desired, Press the **ON** button and a second watering time will be displayed. Press the **NEXT** button and the start time of the 2nd watering window will begin to blink.
 - e. Press the **- or +** button(s) to set the start of the 2nd Watering Window.

Once the desired time is reached, press the **NEXT** button.



NOTE: The controller keeps at least a 15 minute time frame between the end of a water window and the beginning of another water window.

- f. The ending time of the 2nd watering window will begin to blink. Press the **- or +** button(s) to set the 2nd watering window end time. Once the desired time is reached, press the **NEXT** button.



2 The Grow-In Water Window screen will appear and the Grow-In water window start time will begin to blink.

a. Press the **- or +** button(s) to set the time in which the Grow-In schedule will begin every calendar day. Once the desired time is reached, press the **NEXT** button.

b. Press the **- or +** button(s) to set the Grow-In water window end time. Once the desired time is reached, press the **NEXT** button.

Set Rain Delay for Time-based Zones

You may setup a fixed rain delay period for zones programmed as "Time-Based or Grow-In". Irrigation of these zones is delayed for the number of days set once the "Time-Based Rain Delay" threshold is reached.

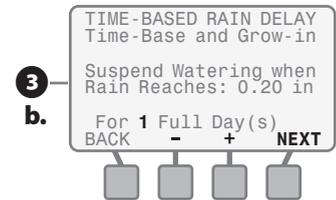
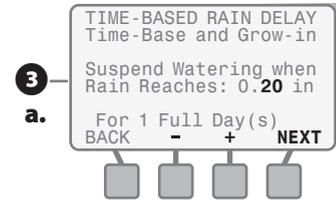
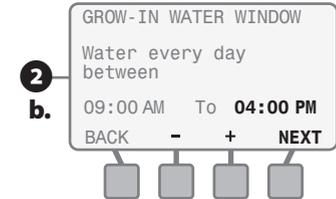
3 The Time-Based Rain Delay screen will appear and the rain threshold will begin to blink.

a. Press the **+ or -** button(s) to set the rain threshold value; then press the **NEXT** button.

b. The delay length will begin to blink. Press the **+ or -** button(s) to set the desired amount of days to wait before re-enabling irrigation on time based and grow-in zones. Once the desired value is reached, press the **NEXT** button.



NOTE: Once the desired amount of rain has been exceeded, the controller will skip the desired amount of full days of irrigation beginning at midnight. I.e., controller will no longer irrigate Time-Based and Grow-in zones today and will skip irrigation of those zones again the following days as required.

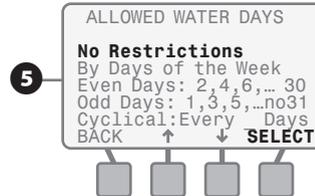
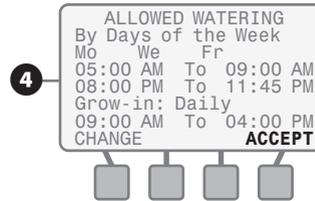


4 The ALLOWED WATERING review screen will appear. This screen displays the Allowed Irrigation Days and the Allowed Watering Times that you set previously and asks you to either **ACCEPT** or to **CHANGE** the information.

5 If you press the **CHANGE** button, the screen will revert back to ALLOWED WATER DAYS. Modify the information by following the previous steps in the Set Watering Days and Set Watering Times section of this user manual.

If you press **ACCEPT** then the CONFIGURE CONTROLLER screen will appear.

You have now completed all of the required steps to configure the controller.



EXAMPLE:

Watering Restrictions are imposed; You can only irrigate on even days of the month from 10:00 PM until 6:00 AM; lawn maintenance occurs every Wednesday. You would like Time Based and Grow in zones to delay 1 full day if measured rain reaches 0.20 in.

To meet site conditions, CONFIGURE CONTROLLER as follows:

- Set Allowed Watering Days to Even Days Of The Month
- Set Block Irrigation on Wednesdays
- Set 1st Watering Window from 10:00 PM to 11:45 PM
- Set 2nd Watering Window from 12:00AM (midnight) to 06:00AM
- Set Grow-In Watering Time from 9:00AM until 5:00 PM.
- Set Time-Based Rain Delay for 0.20 inches of rainfall for 1 full day.

Review Checklist

Enter Site Data
<input type="checkbox"/> Location by Zip Code ○ 5 Digit Site Zip Code (OR)
<input type="checkbox"/> Site Custom Data ○ Site Latitude ○ Site Elevation ○ Monthly Avg. Wind Speed ○ Monthly Avg. Humidity
Set Allowed Watering Days (select one)
<input type="checkbox"/> No Restrictions (OR)
<input type="checkbox"/> Custom Day(s) of the week (OR)
<input type="checkbox"/> Even Days of the Month (OR)
<input type="checkbox"/> Odd Days of the Month - not 31st (OR)
<input type="checkbox"/> Cyclical ○ Days between Cycle ○ Beginning Date
<input type="checkbox"/> Block Day Of Week
Set Allowed Watering Times
<input type="checkbox"/> Set 1st Watering Window
<input type="checkbox"/> Set 2nd Watering Window
<input type="checkbox"/> Set Grow-in Watering Window
<input type="checkbox"/> Set Time-Based Rain Delay

Frequently Asked Questions

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Over/Under Watering

"My controller irrigates too much/too little."

Net Application Rates

The ESP-SMT is designed to calculate the plant water need based on evaporation and plant water use (transpiration). This concept is called ET, or Evapotranspiration (see Page 76 of your user manual). In order for your irrigation controller to determine how long to run each zone. The Net Application Rate (amount of water reaching the ground) of your sprinklers must be programmed appropriately. For an example, see Figure 1.

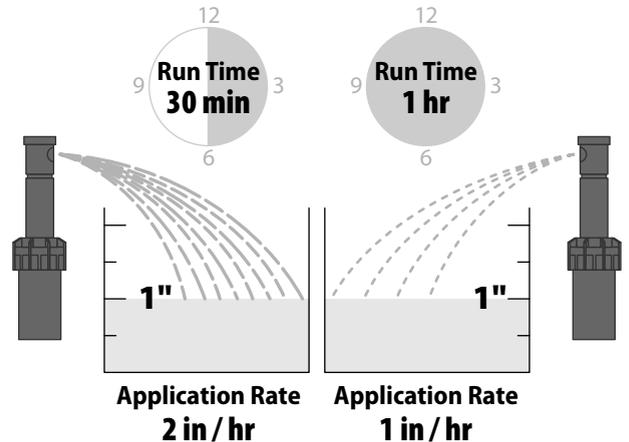


Figure 1
Application Rates vs. Run Time

Ensure that the correct sprinkler type is selected in the Zone Setup Wizard (see Page 21 of your user manual). Be aware that due to inefficiency in many systems the default values associated with each sprinkler type may still lead to over or under watering. Default values are listed in Table 1.

Sprinkler Type	Default Net Application Rate (PR) in/hr
Sprays	1.60
Rotors	0.45
Bubblers	2.50
Point Source Drip	0.80
Rotary Nozzle	0.50

Table 1
Default Net Application Rates

You may adjust the Net Application Rate in the Zone Setup Wizard. Instructions for calculating these values based on actual site conditions are found in the Determine Zone Application Rate section (see Page 80-82 of your user manual).



NOTE: In some cases it may be required to perform a Zone System Audit to determine the appropriate Net Application Rate to use (see Page 82 of your user manual). Remember, the closer the programmed values match actual site conditions, the better the performance you can expect from your ESP-SMT Smart Controller.

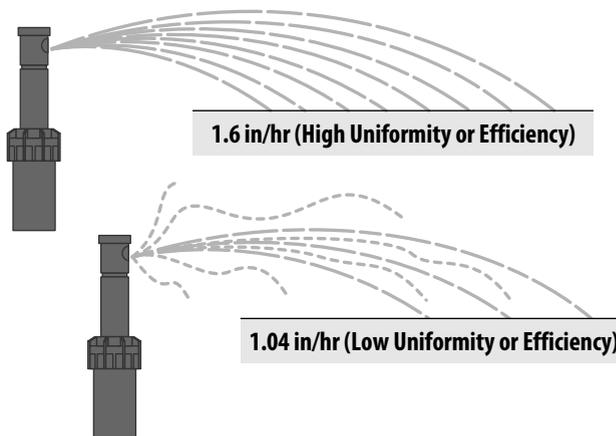


Figure 2
Effect of Uniformity and Efficiency on Application Rate

Microclimate Conditions

Your ESP-SMT controller takes into account several factors to calculate the appropriate irrigation schedule. In addition to historical weather data for your ZIP code, your smart controller also considers real time temperature and rain as well as several site specific factors such as Soil Type, Plant Type, Plant Density and Shade Factor. These factors tell the controller information about the water needs of the landscape and how often to replenish soil moisture. Table 2 lists factors that are key to obtaining an accurate irrigation schedule.



NOTE: Remember, the closer the information programmed matches actual site conditions the better the performance you can expect from your ESP-SMT Smart controller.

Factor	Description
Soil Type	Different soil types have different water holding capacities- the higher clay content soils hold more inches of water per inch of soil than sandy soils. Changing the soil type affects how long and how often irrigation needs to run so that plants get the required amount of water. (See Page 20 of your user manual).

Factor	Description
Plant Type	Different plant types have different water needs- selecting the right type of plant for your landscape will tell the controller information about the amount of water to apply to a certain area. Annual Color, for example, could have very high water needs whereas Desert Plants (Natives) will have very minimal requirements. (See Page 27 of your user manual).
Plant Density	This factor refers to the density of foliage of the landscape found in that zone. A shrub with very dense foliage will require more water than a shrub with fewer leaves. (See Page 28 of your user manual).
Shade Factor	Exposure to the sun is one of the main contributors to moisture loss from the soil profile. Full Sun constitutes an area that does not receive shade from any structure or tall tree during any part of the day. Full Shade refers to an area that would be shaded from direct sunlight all day. (See Page 29 of your user manual).

Table 2
Irrigation Factors

“My controller continues to irrigate while it is raining.”

Rain Suspend Threshold

The ESP-SMT is connected to a weather sensor that provides real time temperature and rain data approximately every minute. If the controller was irrigating when it started to rain, it will continue to do so until the programmed Rain Suspend Threshold is reached (see Page 36 of your user manual). The default value is a measured 0.04 in of rain as shown in Figure 7. This value can be increased (maximum of 0.10) or decreased (minimum of 0.02 in) depending on your individual needs.

“My controller irrigates longer than my previous time based controller.”

ESP-SMT vs. Conventional Controller

Once customized to the individual site conditions, the ESP-SMT uses state of the art technology to determine water need for each zone to ensure optimal landscape health with minimal water usage. Time based controllers will run a set programmed schedule day after day. Your time based controller may have been programmed to under-water the landscape, keeping it alive but not at peak performance.

Keep in mind that the ESP-SMT changes its irrigation schedule daily based on weather conditions. Your greatest water savings will come during the cold/wet months when landscape irrigation should be reduced. During the hotter months of the year, adjustments to irrigation will account for the extra evaporation, keeping your landscape healthy all season long. For an example, see Figure 3.

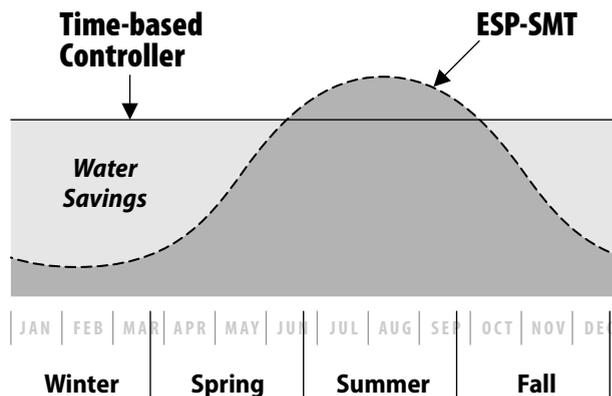


Figure 3
Water Usage - Time Based vs. ESP-SMT ETo Adjusted

Scheduling

**“My controller doesn’t stop irrigating.
It waters several times per day.”**

Cycle + Soak

The ESP-SMT controller is designed with a built in Cycle + Soak function (see Page 79 of your user manual). This feature divides your irrigation time into *Cycles* in order to prevent run-off. The unit will then *Soak* for a minimum amount of time to allow water to reach the root zone. During soak, the controller may irrigate other zones that need water applied. For an example, see Figures 4 and 5.



NOTE: If you wish to fine tune these settings, you may do so by choosing “Custom” on the Cycle and Soak screen in the Zone Setup Wizard.

“My controller waters zones out of order.”

Water Windows

The ESP-SMT keeps track of water need on a zone by zone basis and will schedule irrigation as needed. In addition, the ESP-SMT will use allowed irrigation time wisely by irrigating a zone while others are “soaking”, using the allowed water window more effectively.

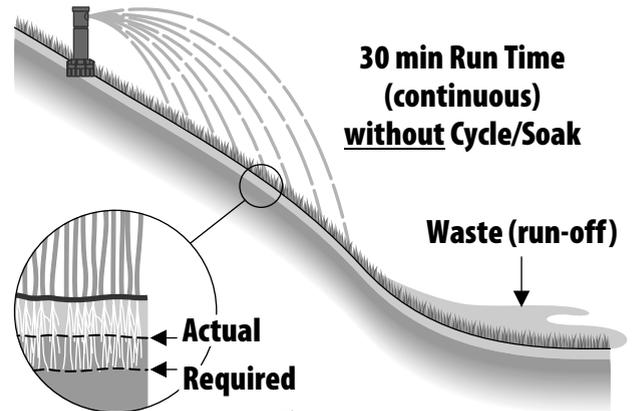


Figure 4
Only part of the applied water reaches the roots.

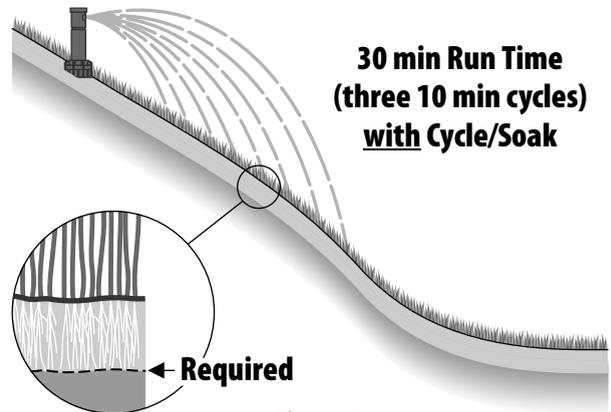


Figure 5
All applied water reaches the roots.



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