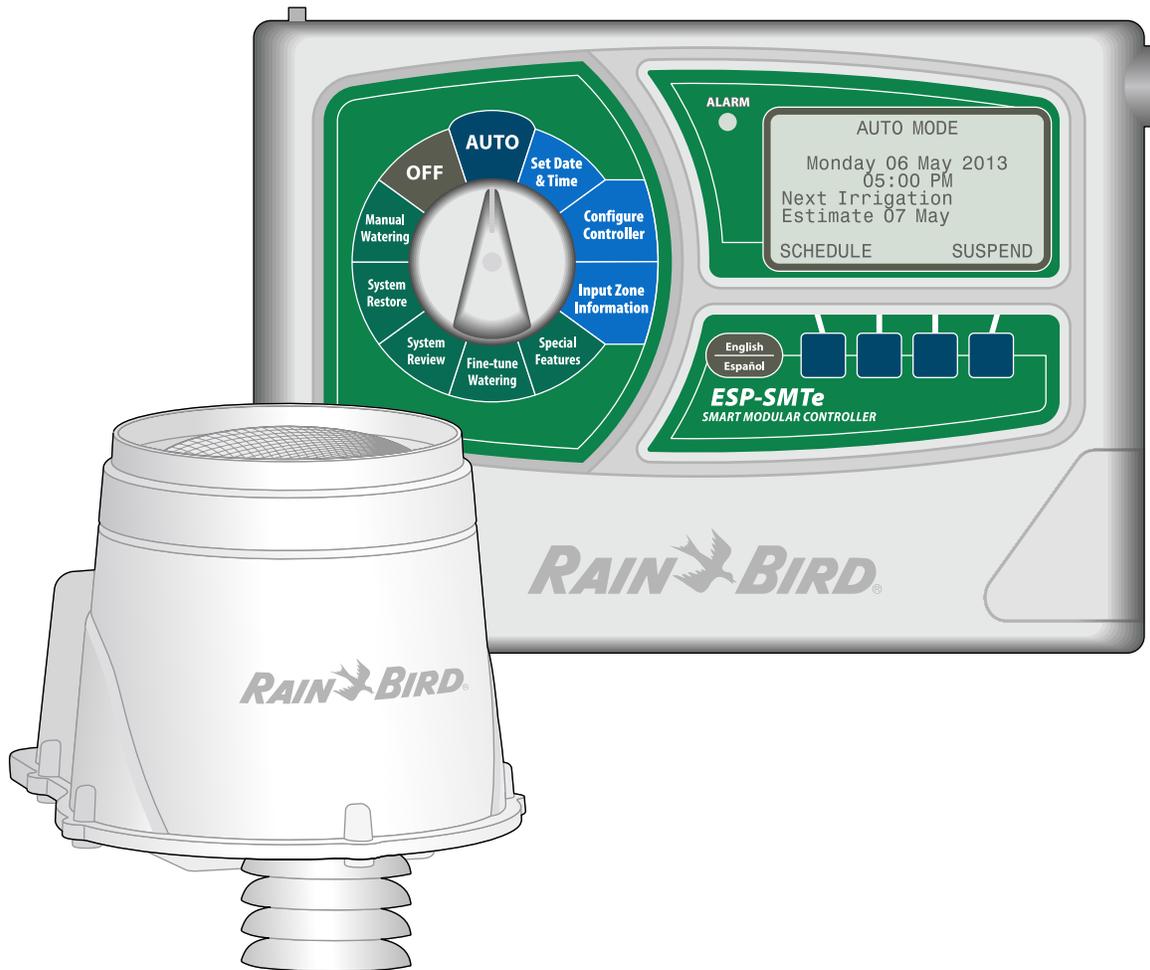




ESP-SMTe Smart Modular Controller Homeowner's Guide



Symbols

-  **CAUTION:** Symbol is intended to alert the user to important instructions or conditions that could seriously affect irrigation effectivity or controller operation.
-  **DIAL:** Symbol indicates that the user is required to turn the dial on the controller to the appropriate position in order to follow subsequent instructions as described in that section.
-  **NOTE:** Symbol is intended to alert the user to important operating functionality, installation or maintenance instructions.
-  **REPEAT:** Symbol indicates that a repetition of previous steps may be required in order to continue or complete the controller programming process.
-  **WARNING:** Symbol alerts the user to the presence of electricity or electromagnetic energy which may constitute a risk of electric shock, radiation exposure or other hazard.

Technical Support

For assistance, contact Rain Bird at 1-800-247-3782 or visit our website at www.rainbird.com/esp-smte

Additional copies of the user documentation for the ESP-SMTe Smart Modular Control System can also be downloaded there, including:

- ESP-SMTe Homeowner's Guide (this document)
- ESP-SMTe Contractor's Manual (full operations manual)
- ESP-SMTe Site Profile Chart
- ESP-SMTe Installation and Quick Setup Poster

To learn more about Rain Bird irrigation systems, visit the Rain Bird Academy at www.rainbirdservicescorporation.com/training

Foreign Language Support

Spanish and French language versions of all user documentation for the ESP-SMTe Smart Modular Control System can be found online at www.rainbird.com/esp-smte

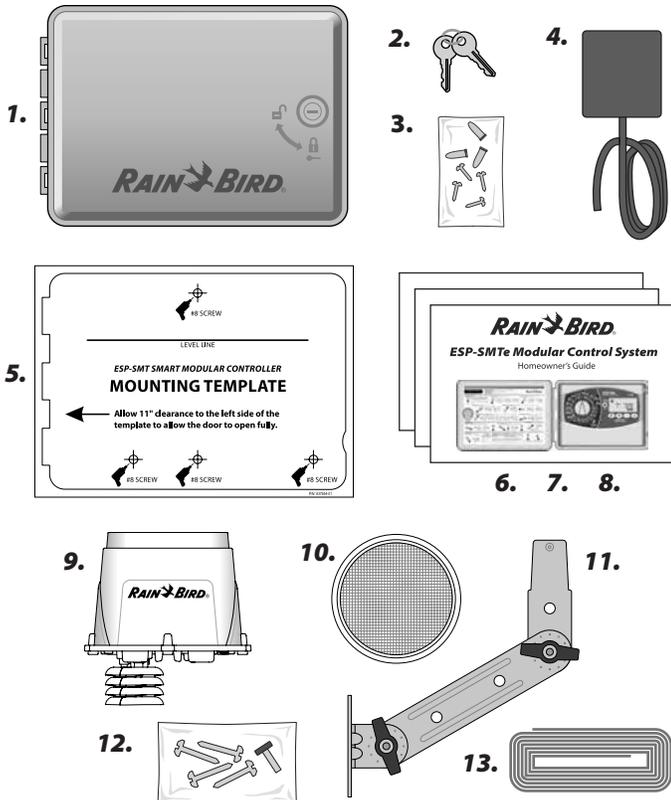
Contents

Check Box Contents.....	1	Normal Operation	
Introduction		Auto	11
Welcome to Rain Bird	1	OFF.....	12
The Intelligent Use of Water.....	1	Programming	
ESP-SMTe Smart Modular Control System	1	Set Date and Time	13
Features and Benefits.....	2	Special Features	13
Basic Irrigation Description.....	2	Event Days Off	13
Controls and Indicators.....	3	Fine-Tune Watering	14
Controller Features.....	3	System Review	14
Weather Sensor Features	3	Controller Settings.....	14
Station Modules.....	4	Zone Settings.....	15
Weather Based Irrigation	4	Next Irrigation Estimate	16
Irrigation Schedules	5	Weather Data	16
Determining Irrigation Schedules	5	Weather Log	17
Factors That Affect Irrigation	6	Event Log	17
Weather	6	View Alarms and Notes.....	17
Soil Type	6	View Events by Date.....	17
Evapotranspiration (ET).....	6	View Events by Zone.....	18
Plant Available Water (PAW).....	6	Event Logs.....	18
Management Allowed Depletion (MAD).....	6	Manual Watering	19
Frequently Asked Questions	7	Water Individual Zone	19
Over/Under Watering.....	7	Water All Zones	20
<i>Why does the controller irrigate less often or</i>		Water Selected Zones	20
<i>longer than my previous time based</i>			
<i>controller?</i>	7	Troubleshooting	
ESP-SMTe vs. Conventional Controller	7	Error Detection	22
<i>Why does the controller seem to irrigate too</i>		Sensor Pod Communication Error	22
<i>much or too little?</i>	7	No Temperature Data Error	22
Net Application Rates.....	7	Short Circuit Error	22
Microclimate Conditions.....	8	Watering or Electrical Issues	23
<i>Why does the controller continue to irrigate</i>		Reset Button	25
<i>while it is raining?</i>	9	Connect Optional Accessory	25
Rain Suspend Threshold.....	9		
Effective Rainfall	9		
Scheduling Variations	9		
<i>Why does the controller water zones out of</i>			
<i>order?</i>	9		
Water Windows.....	9		
<i>Why does the controller water several times</i>			
<i>per day instead of just once?</i>	10		
Cycle+Soak™	10		

Check Box Contents

It is recommended that you familiarize yourself with the various items below, prior to beginning the installation process.

1. ESP-SMTe Modular Controller (Outdoor model shown)
2. Door Keys (Outdoor model only)
3. Controller Mounting Hardware (Four #8 screws and wire nuts)
4. Grounded Power Supply (Indoor model only)
5. Mounting Template
6. ESP-SMTe Homeowner's Guide
7. Site Profile Chart
8. Installation & Quick Setup Poster
9. SMTe Weather Sensor
10. Weather Sensor Debris Screen
11. Weather Sensor Mounting Bracket
12. Mounting Bracket Hardware (Four Phillips head screws + finger screw for mounting sensor to bracket)
13. Sensor Wire - 25 feet of 20-2 UV rated wire (not rated for direct burial)



Introduction

Welcome to Rain Bird

Thank you for choosing the ESP-SMTe Smart Modular Control System from Rain Bird.

For more than seven decades, Rain Bird has led the irrigation industry by providing the highest quality products and services available for state of the art water management.

The Intelligent Use of Water

We believe it is our responsibility to develop products that use water efficiently.

Using weather-based irrigation control, the ESP-SMTe Smart Control System will help maintain your landscape while using 30% to 50% less water than traditional time based controller systems.

ESP-SMTe Smart Modular Control System

Your new Rain Bird control system is designed to provide many years of advanced irrigation control.

The ESP-SMTe Controller is an indoor or outdoor weather-based irrigation controller for residential and light commercial use. There are 2 ESP-SMTe models available that can be expanded up to 22 stations:

- 4 Station Indoor Controller (ESP4SMTei)
- 4 Station Outdoor Controller (ESP4SMTe)

! **NOTE:** An upgrade kit (ESPSMTEUPG) is available for the ESP-M controller to provide ESP-SMTe functionality but does not increase the number of stations.

Features and Benefits

The ESP-SMTe Smart Control System has a variety of advanced water management features, including:

- The ESP-SMTe controller supports 4 zones standard, plus a master valve or pump start relay and includes an SMTe Weather Sensor.
- Station Modules can increase the total number of available zones to 22, should your irrigation needs expand in the future.
- The SMTe Weather Sensor provides weather-based irrigation control, adjusting each zone's watering needs based on the actual site conditions.
- Watering occurs as needed and can be restricted to selected days of the week, odd or even calendar days, or at set intervals.
- Automatic and manual Cycle+Soak™ feature for each zone allows watering duration to be split up to avoid run-off.
- Next Irrigation Estimate shows an estimate of the current soil moisture, the next scheduled irrigation date and an estimated schedule up to three weeks in advance.
- Manual Watering allows immediate watering of selected zones or all zones.
- Event Days Off allows you to select up to four specific dates to block watering for special occasions.
- SMTe Weather Sensor acts as a rain shut-off device and sends rainfall and temperature data to the controller on an hourly basis.
- Rainfall Shutdown suspends all irrigation if the measured rainfall exceeds a user set threshold.
- Cold Weather Shutdown suspends all irrigation to prevent potential freeze damage if the measured temperature is too low.
- English/Spanish Button easily switches the display text between languages.

Basic Irrigation Description

The ESP-SMTe Controller operates sprinklers when irrigation is required.

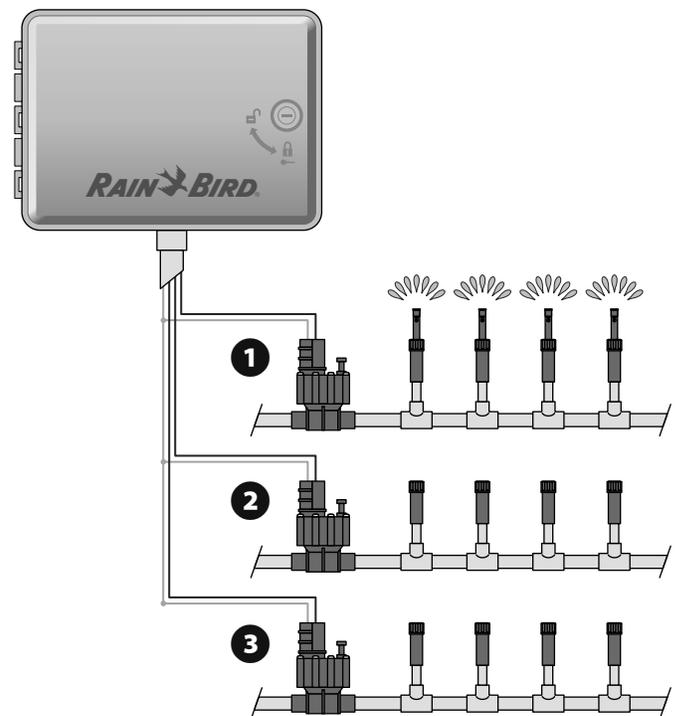
When irrigation is scheduled to begin for a particular zone, the controller sends a signal to the associated valve to open. This allows the sprinklers to begin watering. When the calculated run time is over, the controller shuts off the valve.

Sprinkler Nozzles

Sprinkler nozzles, such as rotors and sprays, are the most common method to apply water quickly and effectively to a large area of landscape.

Drip Emitters

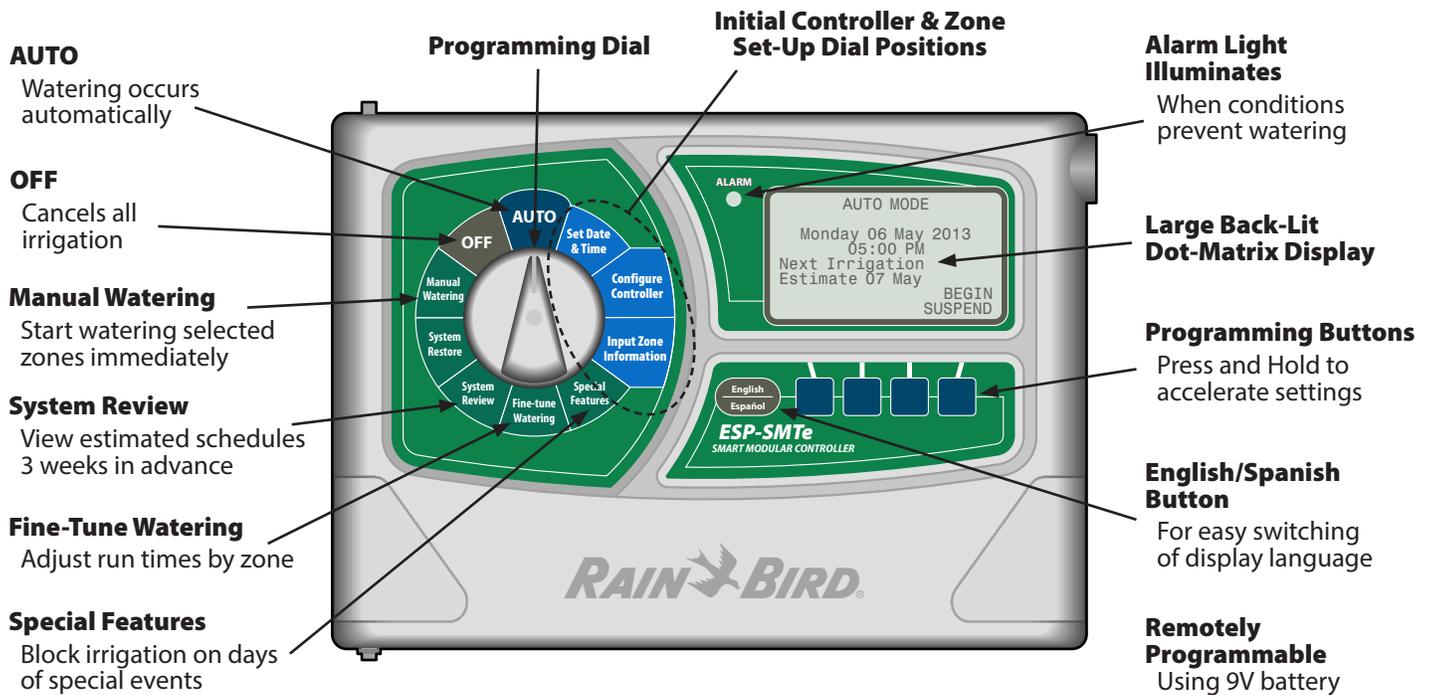
Drip emitters apply water directly to the root zone or base of a plant, using a network of small diameter tubes and emitters. This type of irrigation is more efficient and requires less water than sprinkler nozzles.



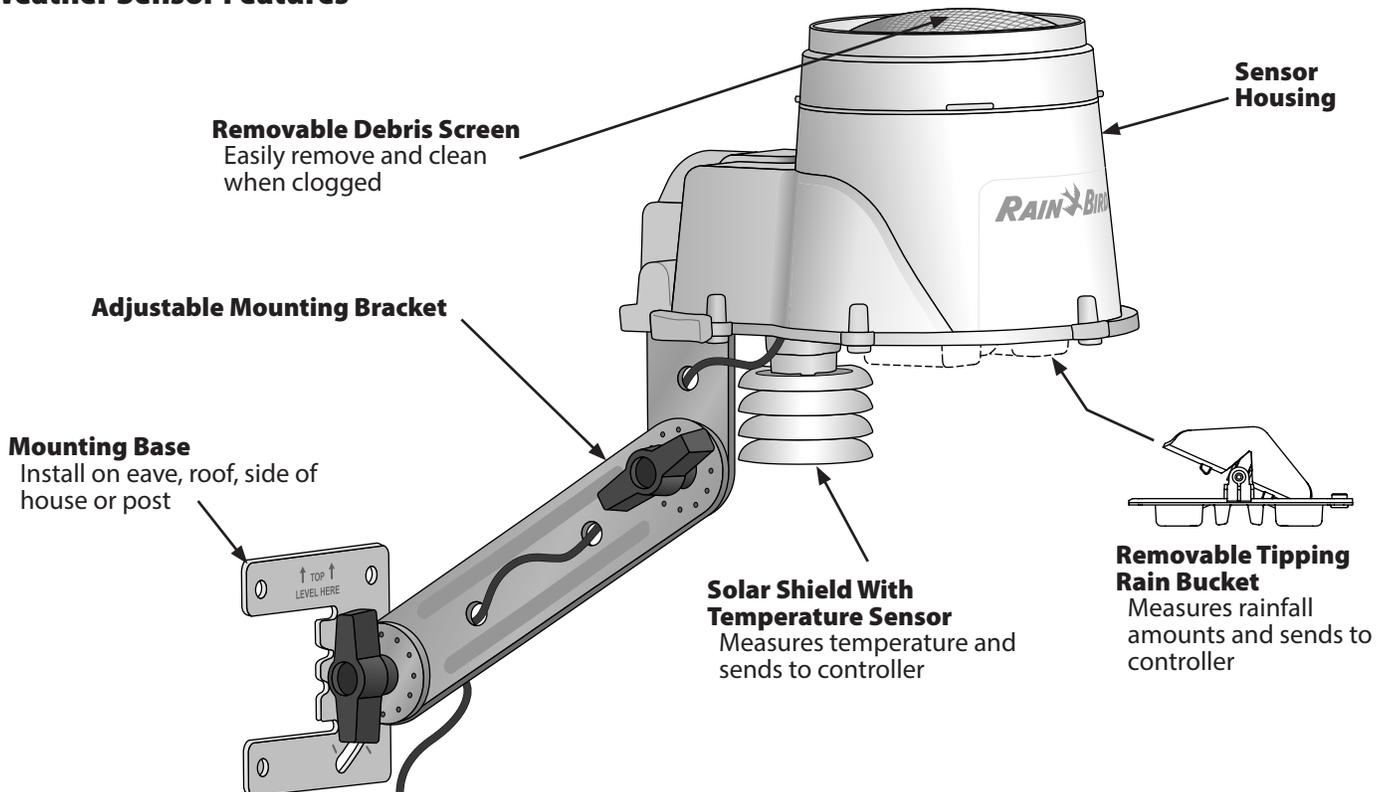
Controls and Indicators

Controller Features

Key operational features of the ESP-SMTe Controller:



Weather Sensor Features

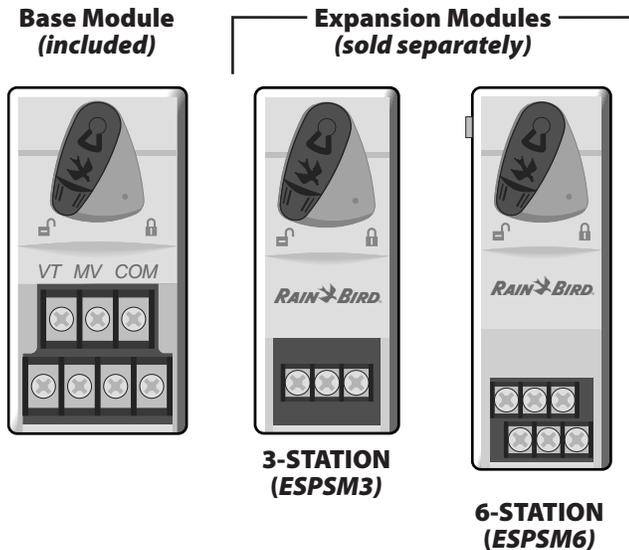


Station Modules

Optional upgrade of additional Station Modules can increase the number of available zones up to 22.

The ESP-SMTe Controller comes standard with a base module that supports four zones (valves). If more zones are required, up to three additional Station Modules (not included) can be installed.

! **NOTE:** The 6-Station module is only compatible with the ESP-SMTe controller, and not the ESP-SMT controller.



System Overview

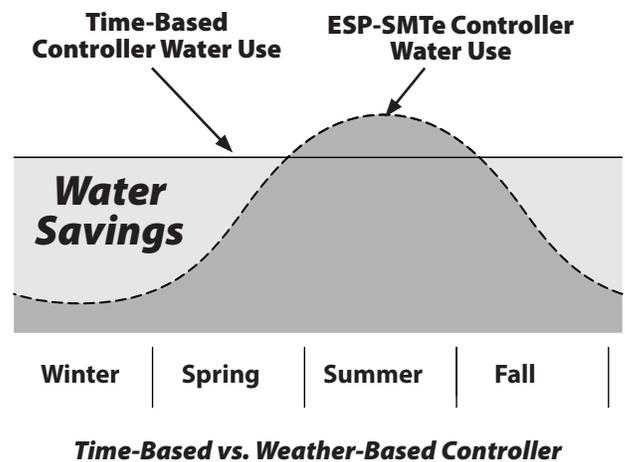
Weather Based Irrigation

The ESP-SMTe Smart Modular Control System is a “weather-based” irrigation system.

Watering is based on actual landscape needs instead of a predetermined schedule. The controller receives current weather data regularly from the SMTe Weather Sensor. This information and specific site conditions (such as soil and plant type) are used to automatically update irrigation schedules so that plants only get water when it is needed.

This is very different than traditional “time-based” controllers that always water on specific days, with fixed start times and run times. Studies have shown that most “time-based” controllers are only adjusted 2 to 3 times per year, resulting in significant periods of over watering and under watering as seasons change.

The ESP-SMTe Smart Modular Control System maintains a vibrant, healthy landscape while using 30% to 50% less water than a traditional time-based control system.



Irrigation Schedules

Irrigation is scheduled only when plants require water.

The ESP-SMTe Control System looks at the soil as a water reservoir that supplies plants with needed water. When the water level in the soil drops too low, the controller will schedule irrigation.

Scheduling is determined by the following factors:

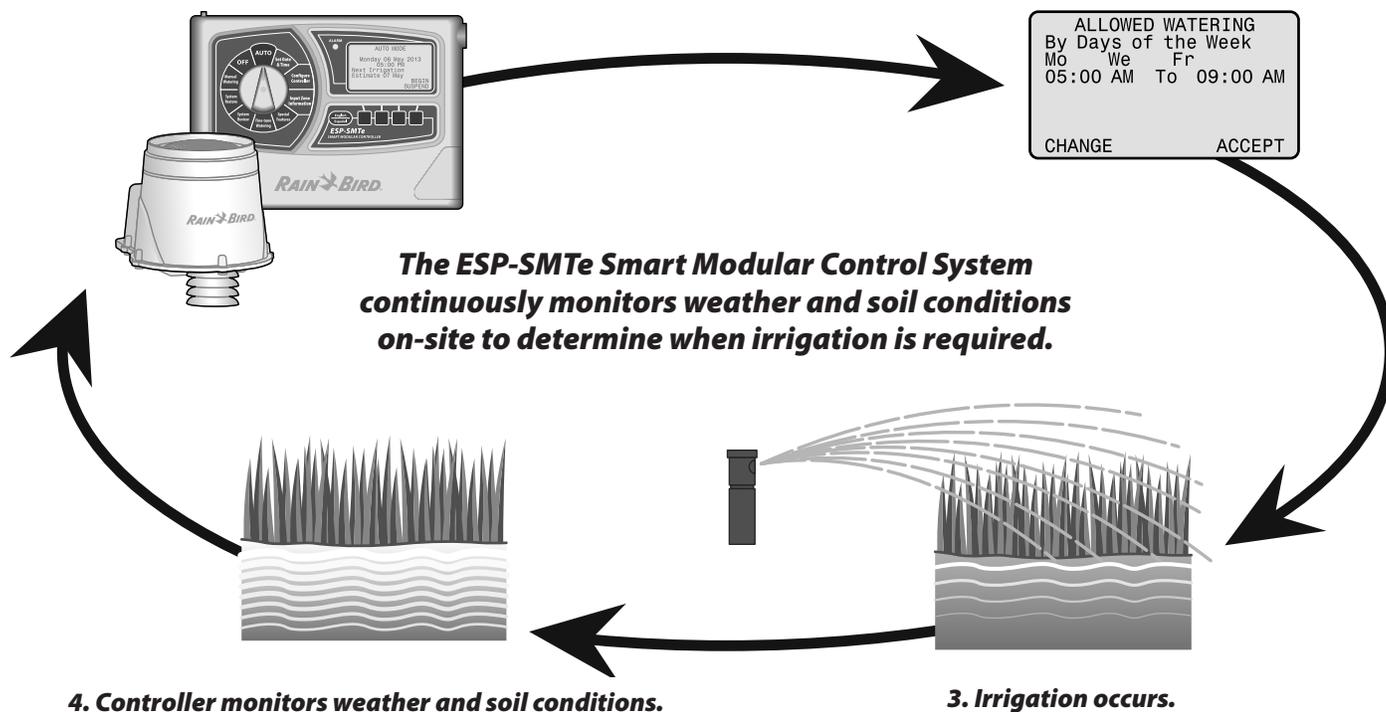
- **Allowed Watering Days** – The days of the week (such as Monday, Wednesday, and Friday) that irrigation is allowed to occur are set by the user.
- **Watering Window** – The time period (such as 5:00 AM to 9:00 AM) that irrigation can occur on the Allowed Watering Day is set by the user.

Determining Irrigation Schedules

1. When the ESP-SMTe Control System determines that the soil is dry, irrigation is required.
2. The controller checks the next Allowed Watering Day and Watering Window to schedule irrigation.
3. On the next Allowed Watering Day, irrigation occurs during the Watering Window.
4. The ESP-SMTe Control System continues to monitor weather and soil conditions, and will schedule irrigation again when required.

1. Controller determines when irrigation is required.

2. Controller schedules irrigation.

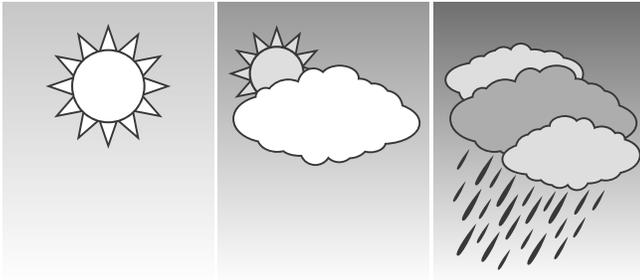


Factors That Affect Irrigation

Weather, environment and site conditions affect watering needs.

Weather

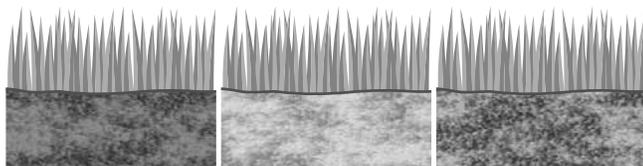
Sunlight, wind, air temperature, humidity, and rainfall will affect the amount of water that plants need. The ESP-SMTe will use information measured by the weather sensor as well as historical weather data to help determine irrigation schedules.



Weather Conditions

Soil Type

Different soil types such as clay, sand or loam, vary greatly in the ability to hold water and the rate that water filters down through the soil. The ESP-SMTe accounts for soil types in each zone to determine when plants need water.



Clay

Sand

Loam

Soil Types

Evapotranspiration (ET)

The ESP-SMTe calculates water needs based on water lost from the soil surface (evaporation) and water used by the plants (transpiration). The rate that water is lost is called evapotranspiration, or ET.

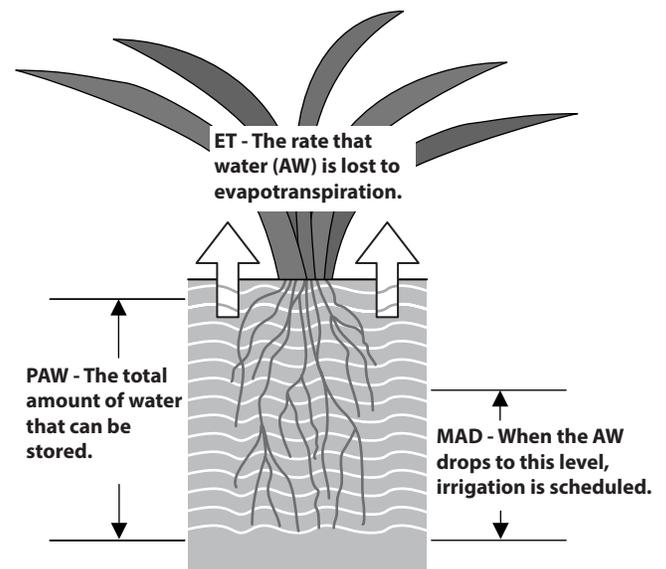
This water loss is influenced by the weather conditions at the site. For example, a hot dry environment would have a much higher ET rate and require longer, more frequent watering than a cool, humid environment.

Plant Available Water (PAW)

The total amount of water that can be stored in the soil for the plant is called Plant Available Water, or PAW. This amount varies based on the soil type and plant root depth. The actual amount of water that is present in the soil is called Available Water, or AW.

Management Allowed Depletion (MAD)

When the actual amount of water available to the plant (AW) gets too low due to water loss through ET, then irrigation is scheduled. This level is referred to as Management Allowed Depletion, or MAD and is set by the user at the controller.



Factors that Determine Irrigation

Frequently Asked Questions

This section addresses some common questions about ESP-SMTe operation.

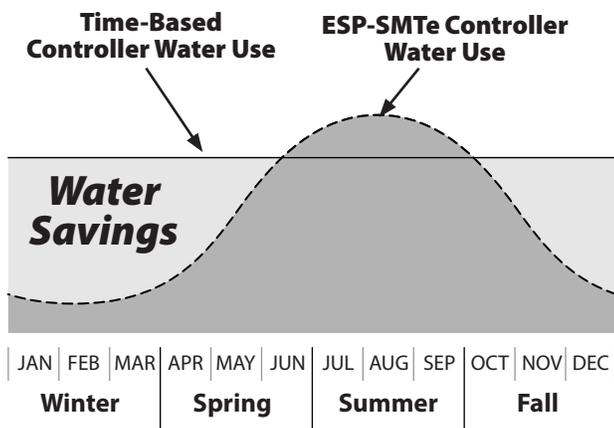
Over/Under Watering

Why does the controller irrigate less often or longer than my previous time based controller?

ESP-SMTe vs. Conventional Controller

The ESP-SMTe uses state of the art technology to determine water needs for each zone to ensure optimal landscape health with minimal water usage. Time based controllers run a set schedule day after day, and do not consider local weather conditions or seasonal changes.

The ESP-SMTe changes its irrigation schedule daily based on water needs. Your greatest water savings will come during the cold/wet months when 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 year long.



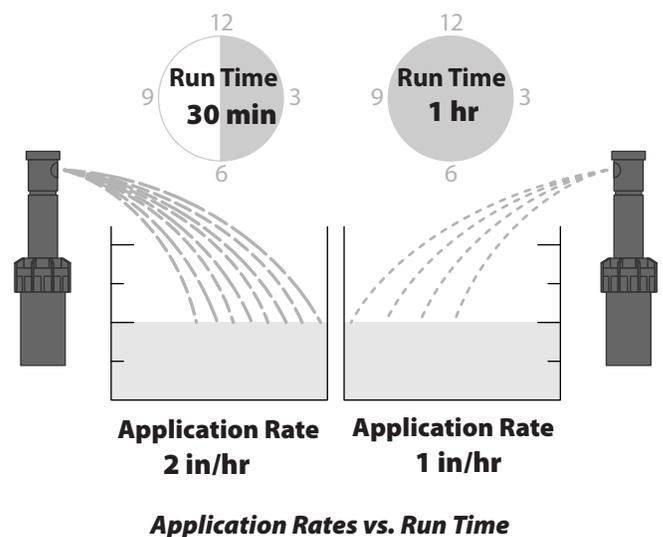
Water Usage - Time-Based vs. ESP-SMTe

Why does the controller seem to irrigate too much or too little?

Net Application Rates

The Net Application Rate is the amount of water that is applied to the landscape in a certain period of time. In order for the controller to determine a Run Time for each zone, the Net Application Rate for your sprinkler type must be programmed appropriately. This value will determine how long the sprinklers need to water to replenish water to the plants.

For example, a sprinkler with an Application Rate of 2 inches per hour can apply twice as much water in a period of time as a sprinkler with a rate of only 1 inch per hour.



The default Net Application Rates for various nozzle types are listed below. Ensure the correct net application rate is entered for each zone.

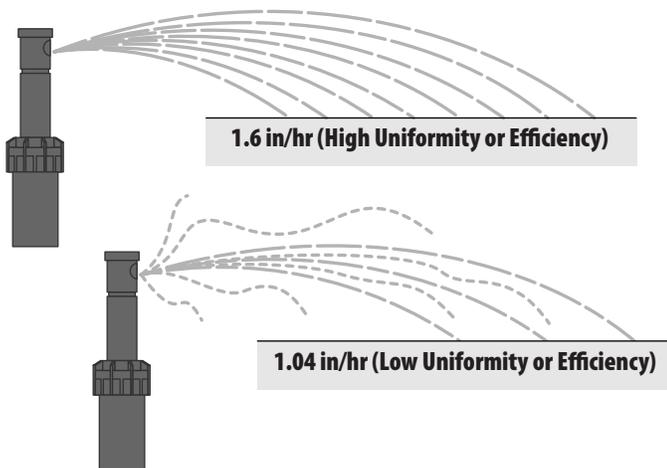
Default Net Application Rates

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

! **NOTE:** The ESP-SMTe Controller will perform most effectively when the programmed Net Application Rates match actual site conditions. In some cases it may be necessary to perform a Zone System Audit to determine an accurate Net Application Rate. Refer to the Determine Net Application Rate section in the ESP-SMTe Contractor’s Manual for more information.

Be aware that due to variations in uniformity and efficiency in many systems, the default values associated with each sprinkler type may still lead to over or under watering.

For example, a Spray sprinkler type that is not operating efficiently may not apply water at the expected rate of 1.6 inches per hour, leading to under-watering.



Effect of Uniformity and Efficiency on Application Rate

Microclimate Conditions

The ESP-SMTe controller bases watering on plant needs which vary greatly depending on site conditions. So there may be drastic differences from week to week in irrigation frequency and run times.

The ESP-SMTe controller takes into account several factors about the climate at your site to determine irrigation schedules, such as Soil Type, Plant Type, Root Depth, 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. The following table lists the factors that are key to obtaining accurate irrigation schedules.

! **NOTE:** Each one of these factors has a specific value for your site that is programmed into the controller. The closer these values match actual site conditions, the better the performance you can expect from your ESP-SMTe controller.

Microclimate Conditions

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.
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.
Plant Density	This factor refers to the density of foliage found in that zone. This includes the amount of leaf surface area of each plant and/or plant spacing (how much soil is exposed). A plant or landscape with very dense foliage will require more water than a less dense landscape.
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 most parts of the day. Full Shade refers to an area that would be shaded from direct sunlight all day.

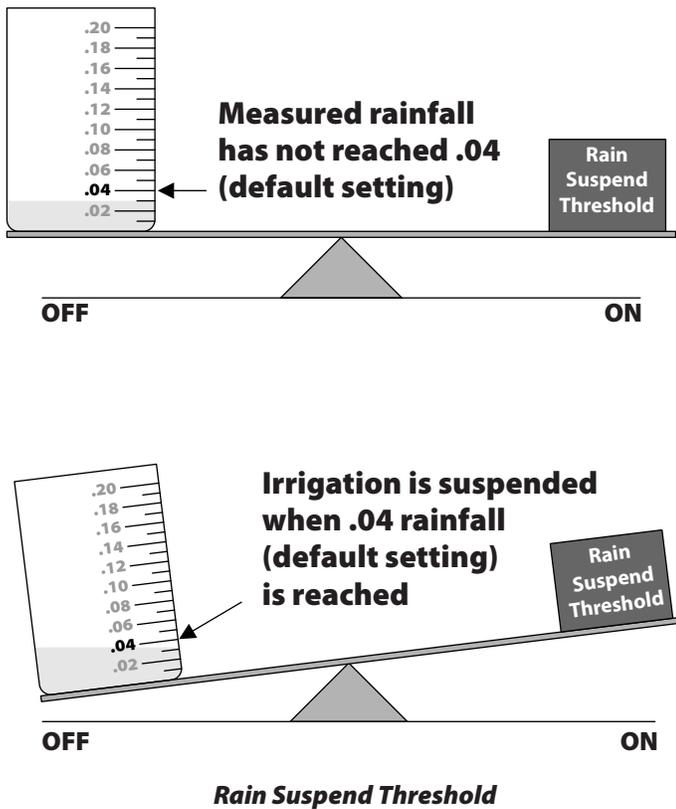
Why does the controller continue to irrigate while it is raining?

Rain Suspend Threshold

The ESP-SMTe 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. The default value is 0.04 in of measured rainfall as shown. This value can be increased (maximum of 0.10) or decreased (minimum of 0.02 in) depending on your individual needs.

Effective Rainfall

When it rains, some of the water may not reach the root zones of the plants or is lost to run-off. The amount of rain that is actually used by the plants is called Effective Rainfall. The weather sensor measures total rainfall, and the ESP-SMTe determines how much to consider Effective Rainfall when calculating irrigation Run Times.



Scheduling Variations

Why does the controller water zones out of order?

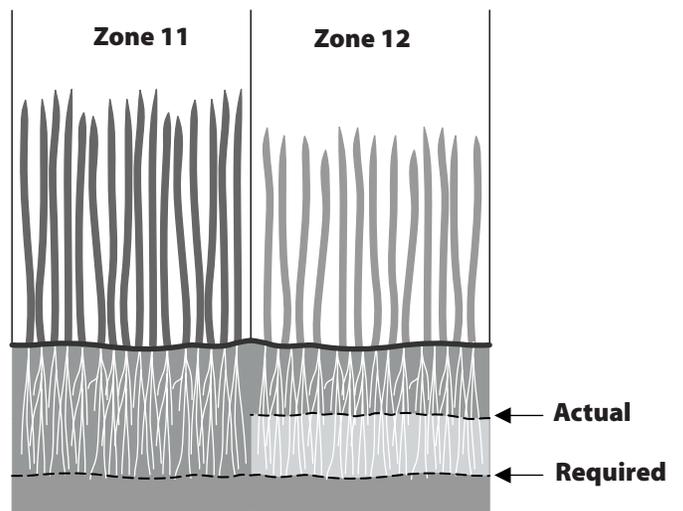
Water Windows

The ESP-SMTe keeps track of water needs on a zone by zone basis and will schedule irrigation as needed. This means that the zones at your site may not irrigate in a sequential order. In addition, the ESP-SMTe will use the allowed Water Windows wisely by irrigating a zone while others are "soaking", using watering time more effectively.

Also, if there is not enough time in an allowed Water Window to complete irrigation for a zone, the controller will finish watering the zone during the next available Watering Window.

Zone 11 has completed watering

Zone 12 has not completed watering in the allowed Water Window

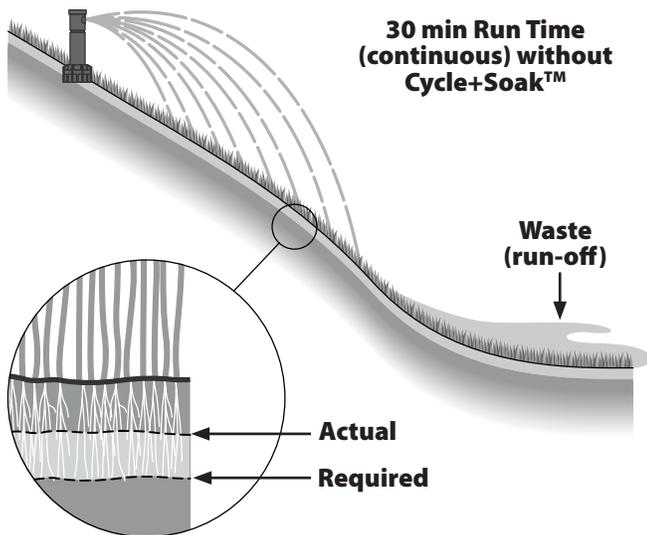


Why does the controller water several times per day instead of just once?

Cycle+Soak™

The ESP-SMTe controller is designed with a built in Cycle+Soak™ function. This feature divides your irrigation Run 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.

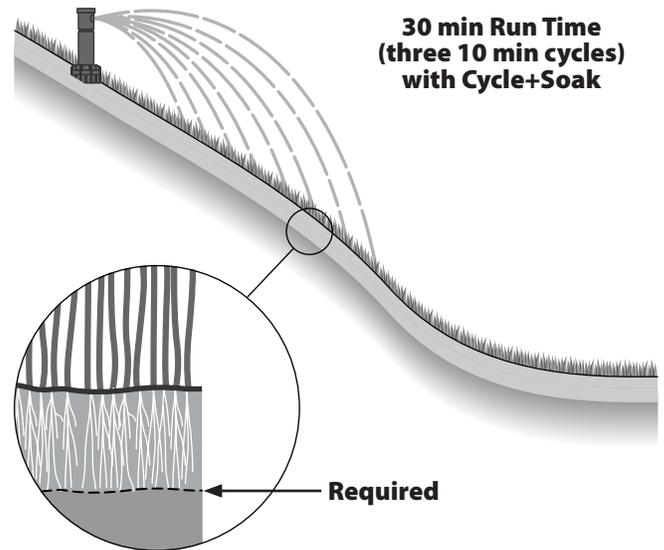
For example, the controller may determine that a 30 minute Run Time is required for a particular zone. If the sprinklers water for 30 minutes continuously without using Cycle+Soak™, some water will be lost to run-off and all of the water won't reach the roots.



Only part of the applied water reaches the roots.

Watering Without Cycle+Soak™

When Cycle+Soak™ is used, the controller will break up the 30 minute Run Time into cycles. It may water for 10 minutes, let the water soak into the soil, run for 10 more, etc. This prevents waste due to run-off and all the water will reach the roots.



All applied water reaches the roots.

Watering With Cycle+Soak™

Normal Operation

Auto

AUTO is the normal operating mode for the controller.

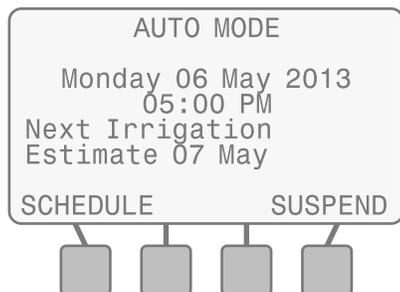
Irrigation starts automatically when required, and the next estimated watering date is displayed.



1. Turn the dial to **AUTO**.

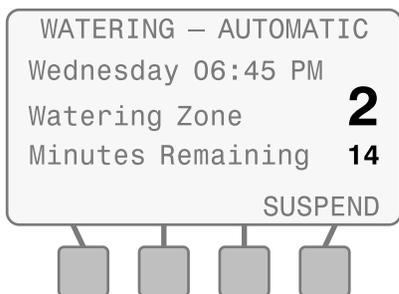
In AUTO Mode:

The display shows the current day of the week, time, and the next estimated watering day.



During Watering:

The display shows the current day, current active zone, and the Time Remaining for that Zone.

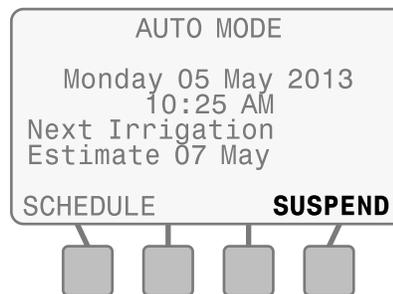


To Suspend Automatic Irrigation:

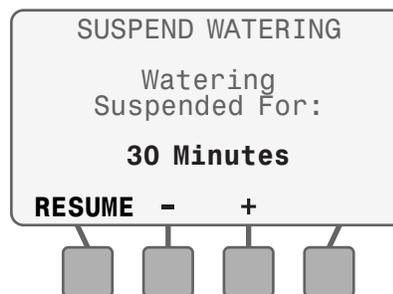
Automatic irrigation can be suspended for a period of time from one minute up to 14 days.

! **NOTE:** This can be useful if you want to temporarily suspend watering. For example, you may want to pick up the newspaper, walk the dog, or are having guests. You can suspend irrigation if rain is in the forecast.

2. Press **SUSPEND**.



3. Press **-** or **+** to set the desired amount of time. The display will show the countdown of the time remaining.

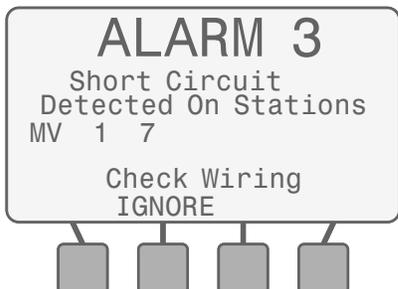


4. Press **RESUME** at any time to resume automatic irrigation.

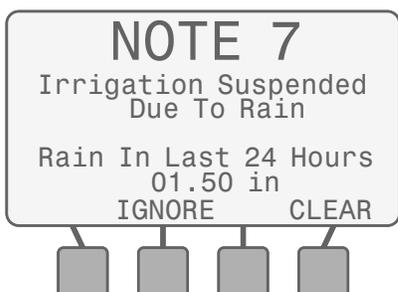
Alarms, Notes and Messages:

In **AUTO** Mode, the controller will indicate problems or issues with normal operation on the display. Refer to the Troubleshooting section for details.

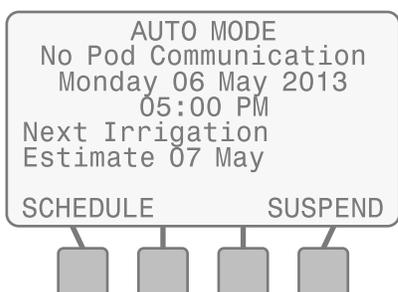
ALARMS indicate there is a significant problem, such as a short in the wiring.



NOTES provide information about why the controller is not watering as expected.

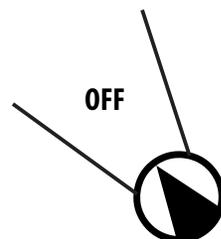


MESSAGES provide information about temporary conditions that are affecting normal irrigation.

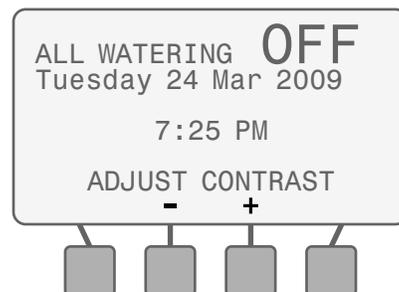


OFF

Cancel all active watering immediately and stop automatic irrigation.



1. Turn the dial to **OFF**.
2. Press **-** or **+** to adjust the LCD contrast if desired.



Controller Configuration and Zone Information settings remain stored in memory while the controller is **OFF** or if there is a loss of power.

Date and time are also maintained for up to 10 years by an internal battery. A 9V battery is not required to maintain settings or date and time.

! **NOTE:** Automatic irrigation will **NOT** occur if the controller remains in **OFF** mode.

Programming

This section provides instructions for features that are used during day-to-day operation and monitoring of your system.

NOTE: A complete guide to configuring and programming the controller is available at www.rainbird.com/esp-smte.

Set Date and Time

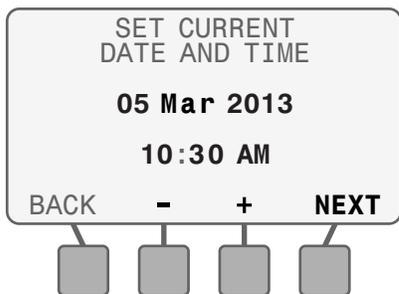
Set the current calendar Date and Time of day.



1. Turn the dial to **Set Date & Time**.
2. Press **-** or **+** to set the **MONTH**; then press **NEXT**.
3. Press **-** or **+** to set the **DAY**; then press **NEXT**.
4. Press **-** or **+** to set the **YEAR**; then press **NEXT**.

5. Press **-** or **+** to set the **HOUR** (ensure that the AM/ PM setting is correct); then press **NEXT**.

6. Press **-** or **+** to set the **MINUTES**.

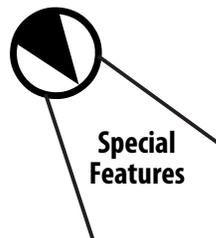


Special Features

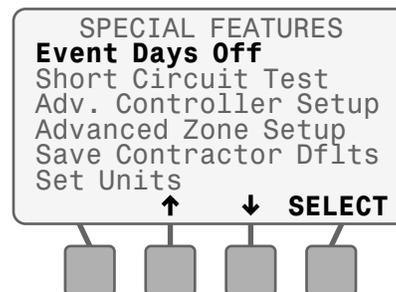
Event Days Off

Prevent watering on a specific date up to a year in advance.

Event Days Off allows you to select up to four specific dates to block irrigation for special occasions.



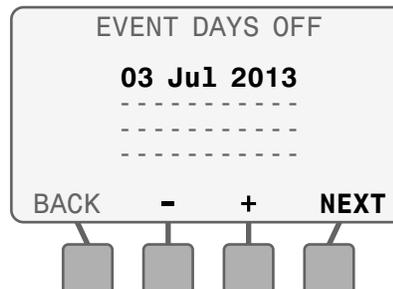
1. Turn the dial to **Special Features**.
2. Press **UP** or **DOWN** until **Event Days Off** is blinking; then press **SELECT**.



3. Press **+** to add a new date.

4. Press **-** or **+** set the date; then press **NEXT**.

NOTE: Event Days Off dates can be entered in any chronological order, and will be re-arranged after leaving the screen.



REPEAT to enter up to four dates.

5. To delete an Event Day Off, select the date using **NEXT** or **BACK** and press and HOLD **-**.

6. When an Event Day Off date has passed, it will automatically be deleted.

Fine-Tune Watering

Adjust the calculated run time for each zone.

If minor adjustments are required to calculated run times, you can increase or decrease run times for ET zones by a selected percentage. These adjustments will apply until you set the value back to 0.

! **NOTE:** The Fine Tune % By Zone value can be adjusted from -60% to +60%. For example, if a +50% adjustment is set, then a calculated run time of 10 minutes will become 15 minutes.

Fine-Tune Watering adjustments only affect Weather-Based zones, and do not affect any zone that is programmed in Newly Planted or Time-Based mode.

! **NOTE:** Fine Tune settings can be adjusted for Newly Planted zones, but will not take effect until the Newly Planted mode expires.



1. Turn the dial to **Fine-Tune Watering**.
2. Press **BACK** or **NEXT** to select the zone to adjust.
3. Press **-** or **+** to set the adjustment percentage for the selected zone.

FINE TUNE % BY ZONE			
1	+20	7	+0
2	+0	8	+0
3	+0	9	+0
4	n/a	10	+0
5	+0	11	+0
6	+0	12	+0

13 +0 19 n/a
14 n/a 20 n/a
15 n/a 21 n/a
16 n/a 22 n/a
17 n/a
18 n/a

BACK - + NEXT

4. After making any adjustments, return the dial to **AUTO**.

! **NOTE:** Any zone that is programmed in Time-Based mode will display **n/a**.

System Review

View system settings, weather information, and the next scheduled watering event.

! **NOTE:** The information under System Review is for review purposes only. This allows the review of programming settings without accidentally making unwanted changes.



1. Turn the dial to **System Review**.

CONTROLLER REVIEW			
Controller Settings			
Zone Settings			
Next Irrigation Est.			
Weather Data			
Weather Log			
Event Log			

SELECT

Controller Settings

Review the settings used to determine irrigation scheduling, such as watering days and times.

1. Press **UP** or **DOWN** until **Controller Settings** is blinking; then press **SELECT**.

CONTROLLER REVIEW			
Controller Settings			
Zone Settings			
Next Irrigation Est.			
Weather Data			
Weather Log			
Event Log			

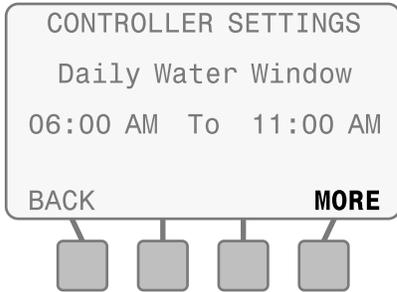
SELECT

2. Review location data, Allowed Watering Days and Water Windows; then press **MORE**.

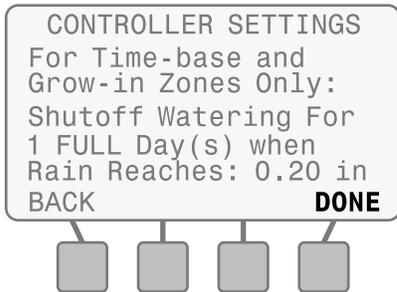
CONTROLLER SETTINGS			
Zip Code		92010	
Even Days:	2,4,6,...30		
	Except Tuesday		
06:00 PM	To	11:45 PM	
01:00 AM	To	06:00 AM	

BACK MORE

- Review the Grow-In Water Window for new plants; then press **MORE**.



- Review the Delay Watering Setting; then press **DONE**.

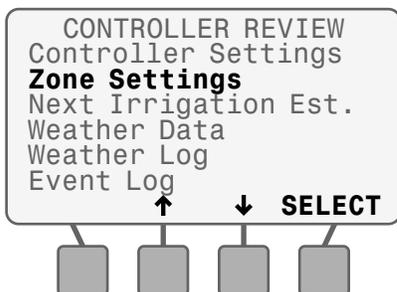


! **NOTE:** When the Weather Sensor detects the set amount of rain, Time-Based and Newly Planted irrigation is shut off for the set number of days. Automatic irrigation (ET zones) are delayed by the added moisture in the soil.

Zone Settings

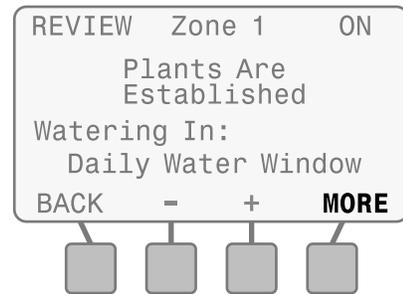
Review the site information entered for each zone, such as plant, soil, and sprinkler type.

- Press **UP** or **DOWN** until **Zone Settings** is blinking; then press **SELECT**.



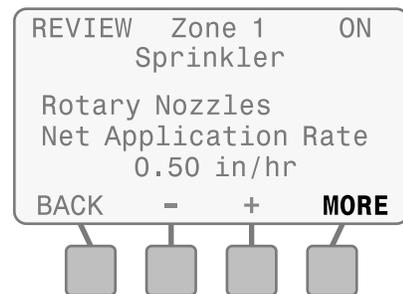
- Press **-** or **+** to view the desired zone.

- Review the settings; then press **MORE**.



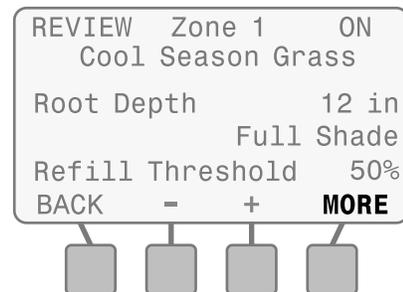
- Press **-** or **+** to view the desired zone.

- Review the settings; then press **MORE**.



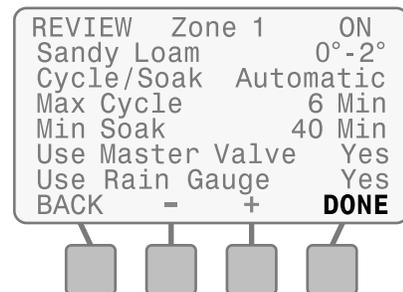
- Press **-** or **+** to view the desired zone.

- Review the settings; then press **MORE**.



- Press **-** or **+** to view the desired zone.

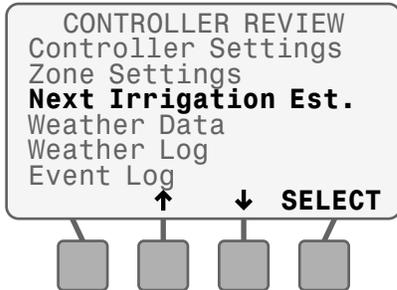
- Review the settings; then press **DONE**.



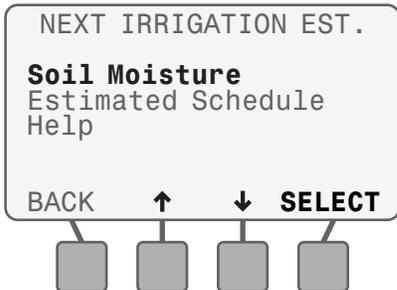
Next Irrigation Estimate

Review the estimated soil moisture content for each zone, the next scheduled irrigation event and an estimated irrigation schedule for up to three weeks in advance.

1. Press **UP** or **DOWN** until **Next Irrigation Est.** is blinking; then press **SELECT**.

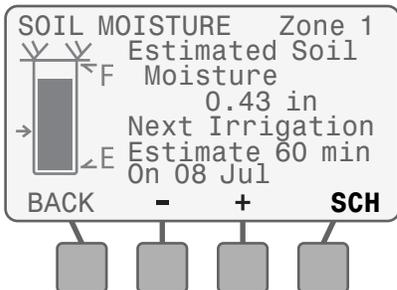


2. Press **UP** or **DOWN** until **Soil Moisture** is blinking; then press **SELECT**.



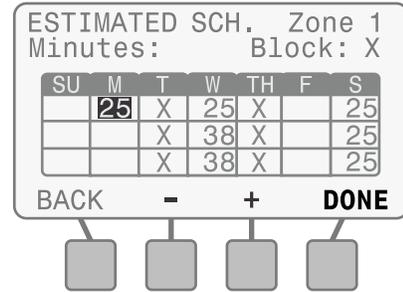
! **NOTE:** Select **HELP** to view more information on soil moisture and estimated schedules.

3. Press **-** or **+** to view the desired zone.
4. Review Soil Moisture and the Next Irrigation Estimate; then press **SCH**.



! **NOTE:** Soil Moisture is only displayed for Weather-Based zones. The bar represents the current Plant Available Water (PAW) and the arrow represents Management Allowed Depletion (MAD).

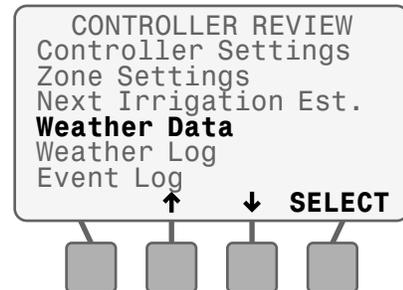
5. Press **-** or **+** to view the desired zone.
6. Review the estimated irrigation schedule for the next three weeks; then press **NEXT**.



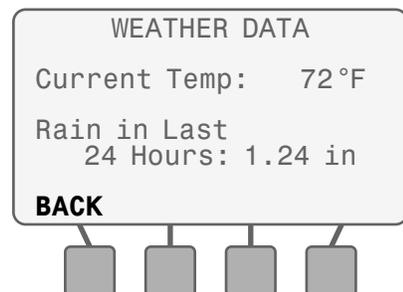
Weather Data

Review the current temperature and measured rainfall over the past 24 hours based on data from the SMTe Weather Sensor.

1. Press **UP** or **DOWN** until **Weather Data** is blinking; then press **SELECT**.



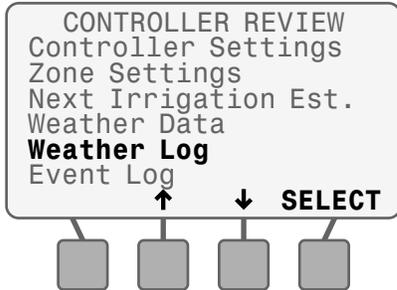
2. Review weather data; then press **BACK**.



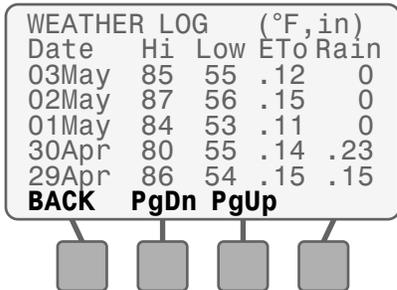
Weather Log

Review a daily log of high and low temperatures, calculated ET values, and rainfall over the past month based on data from the SMTe Weather Sensor.

1. Press **UP** or **DOWN** until **Weather Log** is blinking; then press **SELECT**.



2. Review weather data. Press **PgUp** or **PgDn** to see more info if necessary; then press **BACK**.

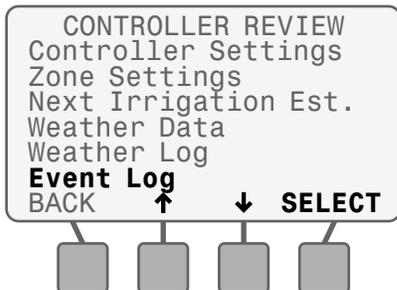


Event Log

Review notifications and error messages concerning irrigation events by date or by zone. Check these messages if the controller is not operating as expected.

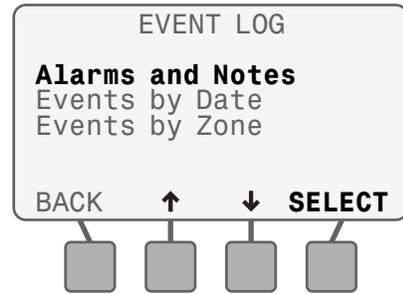
! **NOTE:** A table at the end of this section lists all the messages that can appear in the Event Logs.

1. Press **UP** or **DOWN** until **Event Log** is blinking; then press **SELECT**.

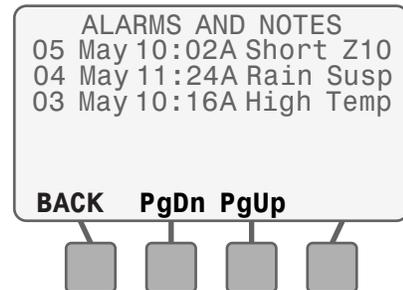


View Alarms and Notes

1. Press **UP** or **DOWN** until **Alarms and Notes** is blinking; then press **SELECT**.



2. Review alarms and notes. Press **PgUp** or **PgDn** to see more info if necessary; then press **BACK**.

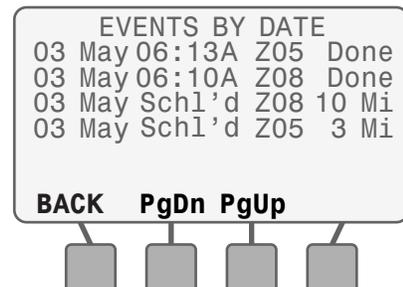


View Events by Date

1. Press **UP** or **DOWN** until **Events by Date** is blinking; then press **SELECT**.

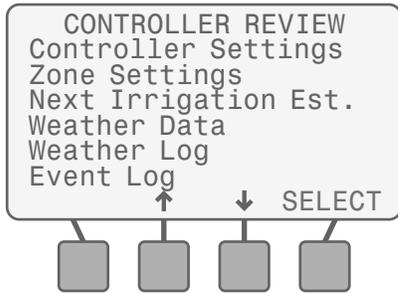


2. Review events. Press **PgUp** or **PgDn** to see more info if necessary; then press **BACK**.

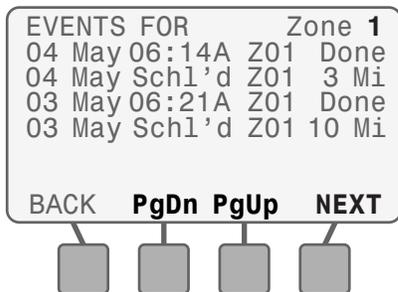


View Events by Zone

1. Press **UP** or **DOWN** until **Events by Zone** is blinking; then press **SELECT**.



2. Review events for the selected zone. Press **PgUp** or **PgDn** to see more info if necessary.
3. Press **NEXT** to review events for the next zone.



! **NOTE:** New log entries will not be displayed while the log is open. Press **BACK** and then **SELECT** to update the display.

Event Logs

Normal Operation Notifications	
Screen Text	Event Description
Schl'd Zxx xxx mi	Irrigation is scheduled for Zone xx for xxx minutes
Zxx Done	Zone xx completed the scheduled irrigation
Cold Susp	All irrigation delayed due to near freezing temperature
Rain Susp	All irrigation delayed due to rain reaching Suspend Watering threshold
Rain Shut Off	Time-Based and Daily irrigation shut off due to rain reaching Rain Shut Off threshold

User Initiated Actions	
Screen Text	Event Description
User Susp	User suspended irrigation
User Term	User terminated irrigation
C Save	User saved Contractor Defaults to backup storage
C Default	User restored Contractor Defaults from backup storage
F Default	User reset all settings to Factory Defaults (does not affect Contractor Defaults saved in storage)
Reset x02	The Reset button was pressed (if a short was logged right before Reset, the short may have caused by the MV or zone wiring short)

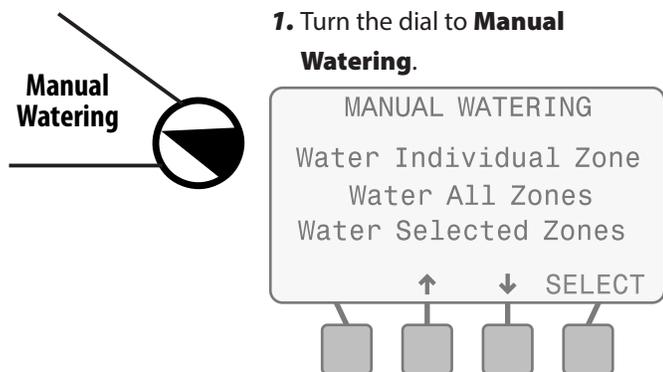
Alerts	
Screen Text	Event Description
Incomplete	The scheduled irrigation did not complete in the time permitted by the Watering Windows. (Select HELP on the NOTE 5 screen or refer to symptom "NOTE 5 on Display Screen" in the Troubleshooting section in this manual.)
Short MV	The wiring or solenoid for the Master Valve has a short. Always fix any Master Valve Short before fixing any shorted Zones.
Short Zxx	The wiring or solenoid for Zone xx has a short
Alarm-Sen	Weather sensor wiring may be damaged
High Temp	Weather sensor may be affected by a local heat source (air conditioner, reflective surface or other source of heat)
Reset x07	AC Power was lost 1. Verify that the 120 VAC is not being shut off by a wall switch 2. Contact electrician or power company if necessary 3. Install a 9V battery to protect against momentary outages
Init	Controller detected an error and cleared the error (no action required unless Init occurs frequently)
Alarm-Temp	Possible temperature sensor malfunction (Reset the front panel - if the error doesn't reoccur no action is required)

Manual Watering

Start watering immediately for selected zones or for all zones.

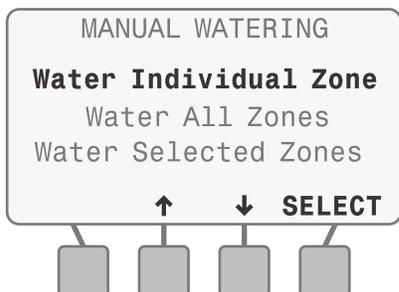
Manual Watering is used to conduct a system check or perform a “system winterization”.

! **NOTE:** If Manual Watering is started during automatic irrigation, the watering schedule is canceled for the day and resumes on the next Allowed Watering Day.



Water Individual Zone

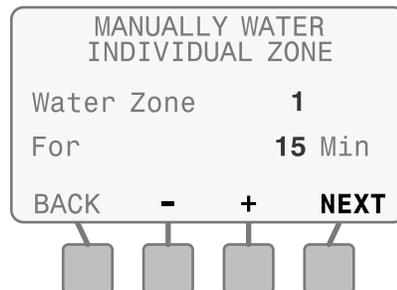
1. Press **UP** or **DOWN** until **Water Individual Zone** is blinking; then press **SELECT**.



! **NOTE:** Selected zone will be activated even if it is not ENABLED. A zone that does not have an associated station module will display **n/a**.

2. Press **-** or **+** to select the desired zone; then press **NEXT**.

3. Press **-** or **+** to set the run time for the selected zone; then press **NEXT**.



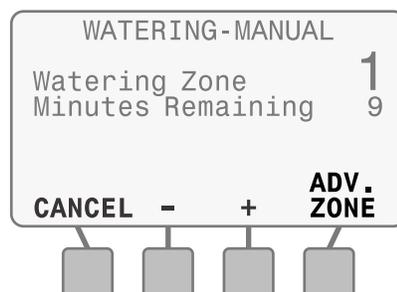
4. **NEXT** will change to **START**; then press **START**.

During Manual Watering:

The Watering - Manual screen shows the current zone and time remaining.

5. Press **-** or **+** to adjust the time remaining if desired.

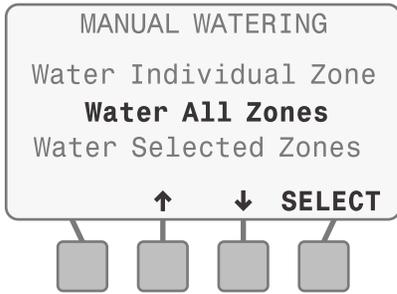
6. Press **ADV. ZONE** to advance to the next zone if desired.



7. To cancel watering, press **CANCEL** or turn the dial to **OFF** for three seconds and then return the dial to the **AUTO** position.

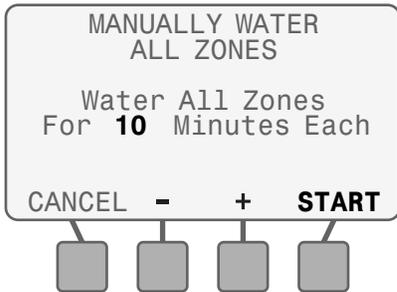
Water All Zones

1. Press **UP** or **DOWN** until **Water All Zones** is blinking; then press **SELECT**.



! **NOTE:** All zones will be activated even if they are not **ENABLED**. Zones will not activate that do not have an associated station module installed.

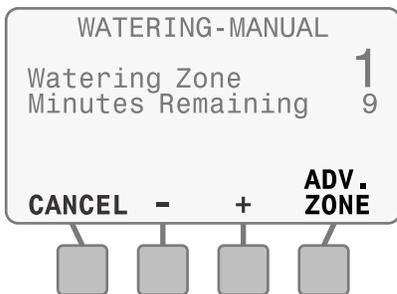
2. Press **-** or **+** to set the run time for all zones; then press **START**.



During Manual Watering:

The Watering - Manual screen shows the current zone and time remaining.

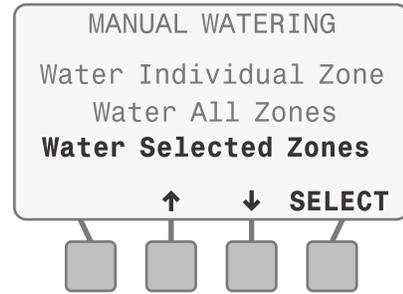
3. Press **-** or **+** to adjust the time remaining if desired.
4. Press **ADV.ZONE** to advance to the next zone if desired.



5. To cancel watering, press **CANCEL** or turn the dial to **OFF** for three seconds and then return the dial to the **AUTO** position.

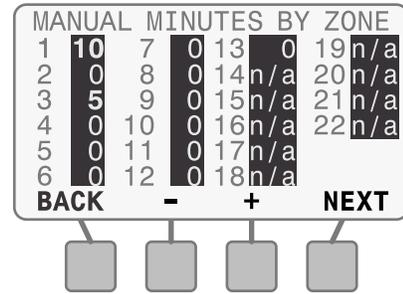
Water Selected Zones

1. Press **UP** or **DOWN** until **Water Selected Zones** is blinking; then press **SELECT**.

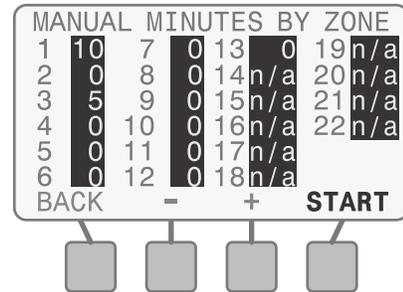


! **NOTE:** Selected zones will be activated even if they are not **ENABLED**. Zones that do not have an associated station module will display **n/a**.

2. Press **BACK** or **NEXT** to select the desired zone or zones.
3. Press **-** or **+** to set the run time for every desired zone; then press **NEXT** until you reach the end of your available zones.



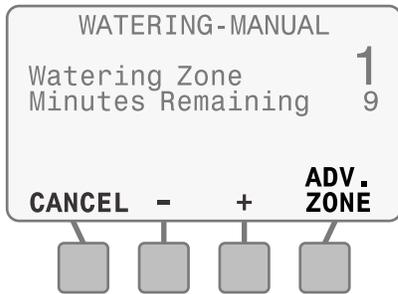
4. **NEXT** will change to **START**; then press **START**.



During Manual Watering:

The Watering - Manual screen shows the current zone and time remaining.

5. Press **-** or **+** to adjust the time remaining if desired.
6. Press **ADV. ZONE** to advance to the next zone if desired.



7. To cancel watering, press **CANCEL** or turn the dial to **OFF** for three seconds and then return the dial to the AUTO position.

Troubleshooting

Error Detection

The ESP-SMTe controller has built-in error detection that includes sensor pod communication errors and electrical short circuits.

Sensor Pod Communication Error

When this error is detected the Alarm LED blinks and the following message is displayed (alternates with AUTO screen):



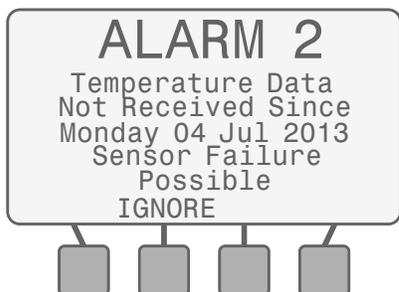
To clear the error:

1. If there are no obvious wiring or connection problems, press the Reset button located on the back of the front panel. After the front panel is reset, communication with the Sensor Pod is usually established within 15 seconds.
2. Check the status LED on the Sensor Pod by removing the wiring access cover with a screwdriver (underneath the Sensor Pod):

Condition	Description
Solid	Good communication
Blinking	No communication (reset front panel).
Off	No power (check wiring).

No Temperature Data Error

When a No Temperature Error is detected, the Alarm LED blinks and the following message is displayed (alternates with AUTO screen):



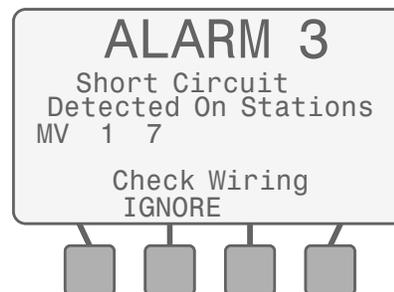
To clear the error:

1. Press the Reset button located on the back of the front panel. If the alarm does not clear, see if there is a wiring or connection problem.
2. If the alarm is unable to be cleared, the Sensor Pod may need to be replaced.

Short Circuit Error

The controller will detect an electrical short circuit or overload condition on a zone, master valve or pump start relay wiring connection. All irrigation for an affected zone is then cancelled and the next unaffected zone will water as scheduled. The controller will attempt to water the affected zone again at every scheduled watering. If watering begins successfully, the error condition associated with that zone will automatically clear.

When a Short Circuit Error is detected, the Alarm LED blinks and the following message is displayed (alternates with AUTO screen):



To clear the error:

1. See if there is a wiring or connection problem.
2. Fix any wiring problem between the controller and the identified zone or valve.



NOTE: A shorted Master Valve will prevent any zone that is activated with the Master Valve from watering. Always repair a shorted Master Valve before fixing zone wiring.

3. Sprinkler valves can also be shorted internally. Disconnect the valve from the wire to the controller and run the Short Circuit Test (turn the dial to **Special Features**) to see if the short is cleared.

Watering or Electrical Issues

The following table shows you how to troubleshoot problems with the ESP-SMTe Controller or Weather Sensor.

Symptom	Possible Cause	Correction
Automatic irrigation is not occurring.	Dial is set to OFF.	Set the dial to AUTO.
	A NOTE or ALARM condition is active that prevents irrigation.	Turn dial to AUTO and read the screen. If an ALARM is active the message will alternate with the AUTO screen every few seconds. If no ALARMS are active then any NOTES will alternate every few seconds. There are also messages that appear on the AUTO screen on the second line. Individual ALARMS, NOTES and messages are described below.
	NOTE 1 – All Zones Are Off	Unit is new. This condition exists when the controller has been installed but has not been programmed. If you have hired someone to install the unit contact them and find out when they plan to program the controller. If you plan to program the controller yourself go the www.rainbird.com/esp-smte and download the Contractor's Manual.
	NOTE 1 – All Zones Are Off Unit has previously been irrigating	This condition exists when the controller's program has been erased. Turn the dial to RESTORE SETTINGS, select "Contractor Defaults", and press RESTORE to restore the stored program. If this doesn't restore normal operation contact the installing contractor.
	NOTE 2 – All watering days are off	This is handled the same as "All Zones Are Off" described above.
	NOTE 7 – Irrigation Suspended Due To Rain	The controller generally will not irrigate if there has been rain in the last two hours. If you want the controller to continue irrigation press "CLEAR" to erase the rain from the memory. Alternately, you can select MANUAL WATERING and irrigate the desired zones.
	NOTE 6 – Irrigation Suspended Due To Extreme Cold	For safety reasons, the controller will not irrigate when the temperature is near or below freezing. If irrigation is necessary MANUAL WATERING will override this safety feature.
	With the dial in the AUTO position the screen reads "Irrigation Suspended For xx Days" or hours or minutes.	Set the Dial to AUTO and press the RESUME button to clear the user activated Suspend feature.
Automatic irrigation is not occurring.	"No AC Power" appears on the second line of the AUTO screen.	The controller cannot irrigate without AC power. The front panel will operate and can be programmed using the 9 V batteries, but this will not power sprinkler valves.
	Irrigation will not occur if irrigation is not permitted or required.	The following methods can be used to determine if irrigation is permitted or required.
	Irrigation is not required based on accumulated weather data.	Turn the dial to SYSTEM REVIEW and select "Next Irrigation Estimate". Review the zone calendars to see when irrigation is scheduled. On the calendar, today is shown in reverse video. Days that are blank indicate that watering is not required. Days with a number in them provides the estimated minutes of irrigation needed that day. If the landscape needs irrigation, manually water the affected zone(s).
	Today is not an "Allowed Watering Day".	The "Next Irrigation Estimate" calendars display an X for each day that watering is not allowed by the controller programming. The features that block watering are described below. If regulations permit, change the "Allowed Watering Days" by setting the dial to CONFIGURE CONTROLLER and change the Block Watering on Specific Day of Week.
	Event Day Off feature is activated.	The controller can be set to block up to 4 days in the future. This can be used to prevent irrigation for a party or other event for which wet lawn areas is undesirable. Turn the dial to SPECIAL FEATURES and select "Event Days Off" to view or change this schedule. Manual watering can be used to irrigate selected zones if desired.
	Block Day of Week feature is activated.	If the grounds are maintained on Wednesdays, that day may be set as a "Blocked Day of Week". Set the dial to CONFIGURE CONTROLLER and display the Block Watering on Specific Day of Week screen. Change the selection for Block Watering day if desired.
	Watering restrictions may be active.	The controller can be programmed to block specific days of the week, odd days of the month, even days of the month, or cyclic days (a specific number of days between each irrigations). The irrigation estimate calendars will display an X on each day that is blocked. The settings can be viewed by turning the dial to SYSTEM REVIEW and selecting the "Controller Settings" option. If local laws permit the settings can be adjusted by turning the dial to CONFIGURE CONTROLLER and stepping through the settings until the desired options are reached.
Automatic irrigation is not occurring.	Zone to Zone Delay is activated for an extended duration.	Set the dial to SPECIAL FEATURES. Select "Adv. Controller Setup" and change the Zone to Zone Delay feature to a shorter time value.
	An individual zone has been set in the OFF (inactive) mode.	Set the dial to INPUT ZONE INFORMATION. Select "Zone Setup Wizard" and change the Zone setting to ENABLED (active).
	AC Power has been lost and is not currently available. The screen is blank.	Reset the circuit breaker or make the necessary repairs to assure a consistent 120 VAC +/- 10% power supply.

Watering or Electrical Issues (continued)

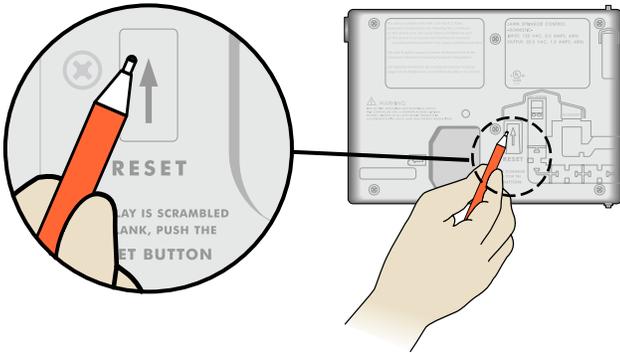
Symptom	Possible Cause	Correction
Display is blank.	An electrical surge or lightning strike has disrupted or damaged the controller's electronics.	Push the RESET button located on the back of the controller front panel. Turn off the controller and disconnect the 9V battery if applicable. After 2-3 minutes restore AC power to the controller. If the electrical surge did no permanent damage, the controller will accept programming commands and function normally.
Temperature Reading does not match the actual temperature for an extended period of time.	Unit is absorbing reflective heat and/or from adjacent pavement.	Relocate the sensor to a more appropriate location.
Inaccurate rain fall measurement occurs on a regular basis.	Debris Screen is clogged and is not allowing rainfall to activate the tipping bucket.	Clean the debris off the Debris Screen. Remove the Tipping Rain Bucket from the sensor housing. Clean with mild soap and water. Verify that the tipping mechanism is functioning properly and reinsert the mechanism into the sensor housing.
	Sensor rain funnel is clogged.	Clear the funnel.
Individual valve does not come on.	Valve wiring problem.	Set the dial to SPECIAL FEATURES and run the Short Circuit Test to identify short conditions and repair accordingly.
Zone is too Wet.	Incorrect Zone Parameters are set such as the Sprinkler Precipitation Rate.	For ET and Drip zones set the dial to FINE TUNE WATERING and decrease watering by up to 60% in 1% increments. For Time-Based zones adjust the run time for the affected zone(s).
Zone is too Dry.	Incorrect Zone Parameters are set such as the Sprinkler Precipitation Rate.	For ET and Drip zones set the dial to FINE TUNE WATERING and increase watering by up to 60% in 1% increments. For Time-Based zones adjust the run time for the affected zone(s).
Run off is occurring on a regular basis.	Zone input information may not match actual site conditions.	Set the dial to INPUT ZONE INFORMATION and change the soil type and/or degree slope.
NOTE 3 on Display Screen.	Unusually High Temperature Reading.	Verify that the temperature sensor is not being heated by an air conditioner or reflective surface. Relocate the sensor in a different location to more accurately measure the ambient temperature of the site.
NOTE 4 on Display Screen.	Unusually High Rainfall Reading.	Verify that the Rain Gauge is not receiving runoff from the roof, trees, etc. Check the mounting bracket is secure and not swaying back and forth.
NOTE 5 on Display Screen.	Watering Not Completed During Watering Window.	If this is an occasional occurrence, the controller will finish the required irrigation during the next allowed watering day. If it is a regular occurrence, expand the Watering Window using CONFIGURE CONTROLLER. Another solution is to reduce the soak time for the affected zones.
NOTE 6 on Display Screen.	Irrigation Suspended Due to Extreme Cold.	If irrigation is desired at this temperature, set the dial to the SPECIAL FEATURES, select "Adv. Controller Setup" and change the user set value (Temp Below) to a lower threshold temperature value.
NOTE 7 on Display Screen.	Irrigation Suspended Due to Rain.	If irrigation is desired at the current rainfall amount, set the dial to SPECIAL FEATURES, select "Adv. Controller Setup" and change the user set value (When Rain Reaches) to a higher rainfall threshold.
NOTE 8 on Display Screen.	Unit is re-initializing, Please WAIT.	Unit has encountered a small problem. The controller will normally correct itself. However, if the NOTE doesn't go away after a couple minutes press the Reset button.

Reset Button

The Reset button resets the controller. Active watering is canceled, and all previously programmed configuration and zone information remains stored in memory. Irrigation will resume on the next Allowed Watering Day.

Insert a small tool into the access hole and press until the controller is reset.

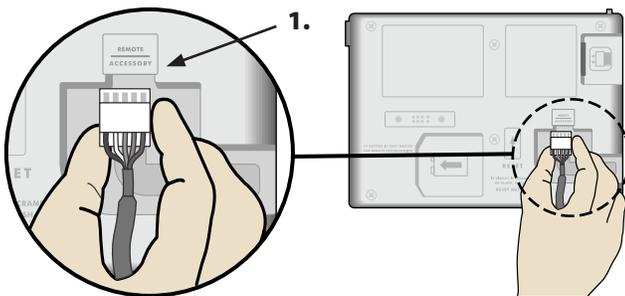
! **NOTE:** We suggest using a non-metallic object such as a pencil or pen to press the Reset button.



Connect Optional Accessory

! **NOTE:** Use only Rain Bird approved devices with 5 pin accessory port. Unapproved devices may damage controller and void warranty.

1. The front panel provides a port for the use of external devices, such as the Rain Bird LIMR Remote.



Safety Information



WARNING: A circuit breaker or cutoff switch is to be provided in the fixed wiring to isolate the controller. The current date and time on the controller is retained by a long-life lithium battery, which must be disposed of in accordance with local regulations.

- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
- This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
- If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by the following measures:
 - » Reorient or relocate the receiving antenna.
 - » Increase the separation between the equipment and the receiver.
 - » Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - » Consult the dealer or an experienced radio/TV technician for help.
- Changes or modifications not expressly approved by Rain Bird Sales, Inc., could void the user's authority to operate the equipment.
- This product was FCC certified under test conditions that included the use of shielded I/O cables and connectors between system components. To be in compliance with FCC regulations, the user must use shielded cables and connectors and install them properly.



Rain Bird Corporation
6991 East Southpoint Road
Tucson, AZ 85756
USA
Tel: (520) 741-6100
Fax: (520) 741-6522

Rain Bird International
1000 West Sierra Madre Avenue
Azusa, CA 91702
USA
Tel: +1 (626) 963-9311
Fax: +1 (626) 852-7343

www.rainbird.com
1-800-247-3782