



Weather Reach Receiver

Model WR-7

Users Guide Supplement

Version 2
11/04

Support

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Introduction

Congratulations, you are the owner of a Weather Reach Receiver! You now have a tool that will enable you to water your landscape with precisely the amount of water your plants need, when they need it. The principles that make Weather Reach work have been used in the irrigation industry for over 20 years. Weather Reach makes high-level technology available to business owners, homeowners, parks, cities, and you. Weather Reach is a management tool for water conservation, financial savings, time savings, and, when used properly will ensure a healthy landscape.

Three Basic Principles of Weather Reach

To understand how Weather Reach works and how to use it, we must first establish a basic understanding of how to efficiently water plants. We can summarize this information into three basic scientific principles.

Principle #1:

Soil Reservoir: The purpose of watering plants, i.e. your lawn, is to get water to the roots. The soil that surrounds a plant's root system acts as a reservoir or sponge. Soil soaks up water, and holds it there for the plant's roots to use in order to stay healthy and alive. Consider your soil a reservoir of available water for your plants. This reservoir has a specific capacity based on your soil type and plant root dept.

Principle #2:

Weather Affects Landscapes: Landscapes use water at changing rates based on weather conditions. Once the water is depleted from the soil due to evaporation it is time to water. Landscapes and soils lose more water when it is hot, when it is windy, when humidity is low, and when the sky is clear. Landscapes use less water and less water is lost from soils when it is cool, when there is no wind, when humidity is high, and when it is overcast. Weather is constantly changing. These changes affect water needs of your landscape.

Principle #3:

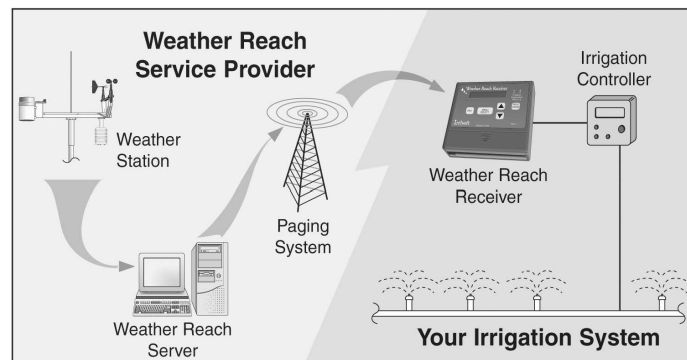
Evapotranspiration is a Measurement of Soil Moisture Losses:

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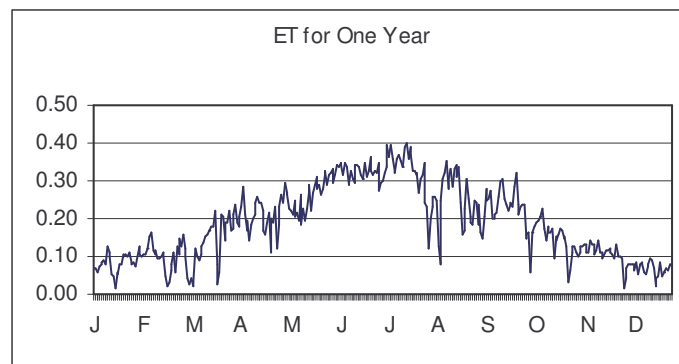
Evapotranspiration, or ET, is a measurement of the water that evaporates into the air from the soil and the amount of water that is used (transpired) by a plant. ET is used to determine how much water must be returned to the landscape either by rainfall or by using your sprinkler system.

How Weather Reach Works

With the understanding of these basic principles, let's discover how Weather Reach works. To begin, Weather Reach receives a signal from a weather station located near your landscape. Weather data including solar energy, temperature, wind, humidity, and rainfall, is broadcast from the Weather Reach Service Provider every hour from the weather station directly to your Weather Reach Receiver (see the figure below). The Weather Reach Receiver uses this data to compute ET and control how often your sprinkler controller waters your landscape.



This graph illustrates that ET is highest in the hot summer months, exactly the time when your lawn needs the most water.



Important Weather Reach Terminology

In order to help you better understand your Weather Reach Receiver, here is a simple list of the terminology used with this product. Please refer to this glossary whenever necessary.

Sprinkler Controller: The sprinkler controller manages your sprinkler valves. It should be correctly wired to Weather Reach Receiver according to ET Enable specifications, please see the Weather Reach Receiver Users Guide, page 17 for more detailed information. Your sprinkler controller needs to be programmed with the following settings:

- Available days to irrigate (typically set to every day)
- Cycle start times
- Valve run-times (which is enough time to apply the needed amount of water)

The Weather Reach Receiver will allow watering only on the days when watering is needed, based on current weather conditions. The Weather Reach Receiver automates the sprinkler management and works with your sprinkler controller to successfully water your landscape.

ET: The abbreviation for evapotranspiration. (Please refer to Principle #3 on page 1, for more information on ET.)

Start Threshold: The amount of water that must evaporate before the Weather Reach Receiver will allow watering to occur. The Start Threshold represents how many inches (or mm) of water should be applied to your landscape during each watering cycle, that was lost due to evaporation. This is a numerical value based on your soil type and the root depth of your plants. Please see your Users Guide on page 44 for chart information to determine this value.

Soil Moisture Depletion Balance: This is the amount of water depleted from your soil. This balance is constantly changing because it is based on ET, rainfall, and residual from previous watering cycles. When the Soil Moisture Depletion Balance reaches the programmed Start Threshold, the Weather Reach Receiver will allow watering.

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Let's compare watering to filling the gas tank in your car. When the gauge reads close to empty, it is time to fill the tank. When soil moisture has depleted, the Weather Reach Receiver allows the sprinkler system to fill the soil reservoir to ensure a healthy landscape, like filling the gas tank. A controller without Weather Reach technology may water every other day, whether the landscape needs it or not.

By using this method of watering, your sprinkler system may water more frequently in the summer months, and less frequently in the spring and fall months since watering is now based on weather (which affects how much water evaporates from your soil). Weather Reach automatically adjusts throughout the year to keep the moisture levels in your soil reservoir at the best level for the health of your plants.

Rainfall: You have seen that rainfall is used to determine when watering occurs. Your Weather Reach Receiver may have been installed with an on-site rain gauge. If so, this should be kept free of debris. If you do not have your own rain gauge then the Weather Reach Receiver will use the rainfall information from the local weather station.

Your Weather Reach Receiver was programmed to define effective rain. A light rainstorm may not provide enough water to the plants and soil, so the sprinklers may still come on. After a heavy rain the watering may be suspended for several days.

ET Window Start and ET Window Length: The Weather Reach Receiver must be programmed to the time of day your sprinkler controller is set to water and how long it takes to complete the watering of all the zones. For example, your controller may be set to start irrigating at 2:00 am and will continue to water each zone until 5:00 am. This sprinkler cycle takes 3 hours to complete. In this example the ET Window Start of your Weather Reach Receiver would be set to 2:00 and the ET Window Length is 3 hours. The ET Start Window is not used to start a watering cycle but is used to allow the Weather Reach Receiver to control watering during that period.

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A and B Start Thresholds: Because your landscape may have different types of plant life, your Weather Reach Receiver may use two Start Threshold values, an A threshold and a B threshold. For example, you may be watering your lawn based on your A Threshold and shrubs on your B Threshold. These two different types of plants require different amounts of water in the soil to remain healthy because they utilize water at different rates and have different rooting depths; grass generally needs more water than shrub beds. If you are unsure if you are using both A and B Thresholds, please refer to your Users Guide, page 44.

A and B Soil Moisture Depletion Balances: Two soil moisture depletion balances are kept, typically one for lawn areas and one for shrubs. Once the Soil Moisture Depletion Balance reaches the Start Threshold for A or B, the Weather Reach Receiver will allow the associate valves to water.

Getting to know your Weather Reach Receiver

Display

1. The LCD screen displays key information and allows you to view the menus.

Buttons

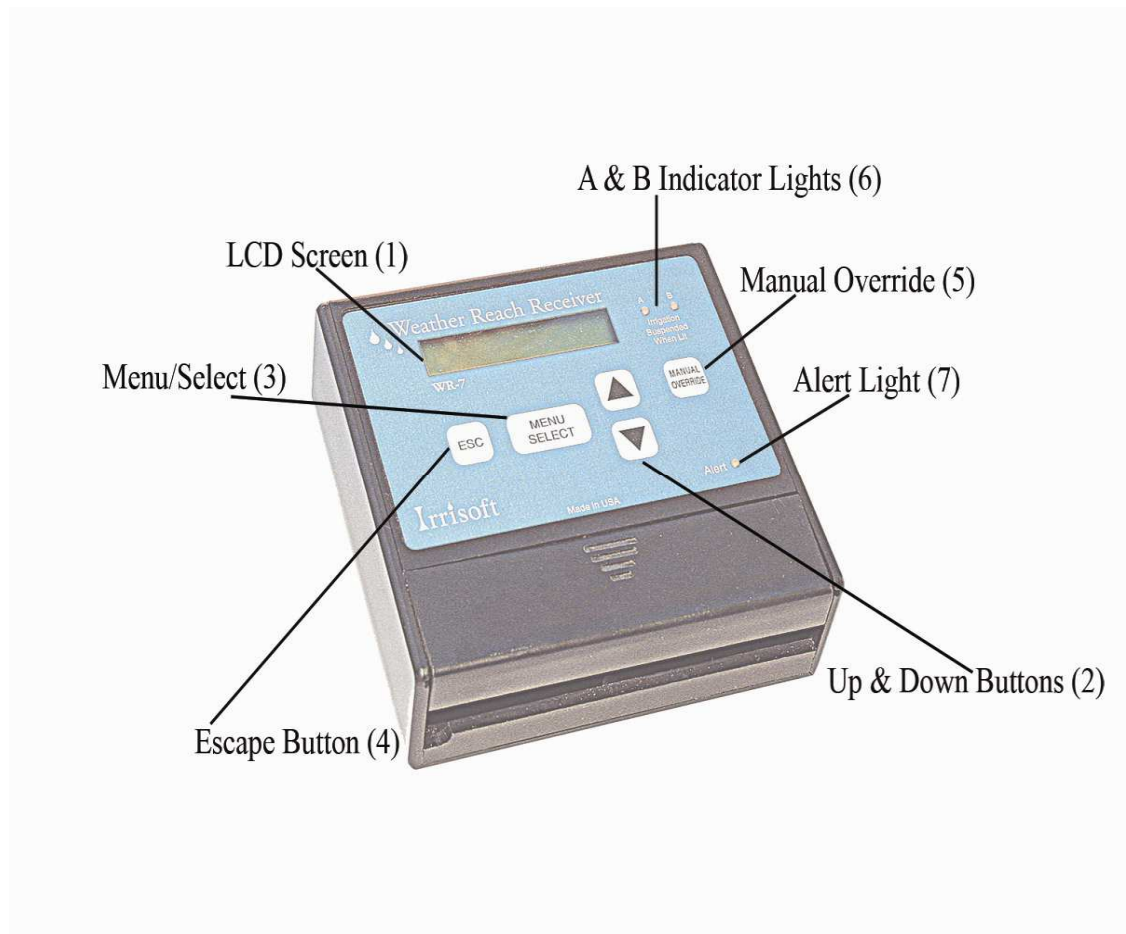
2. Up and Down arrow buttons are used to navigate the menus in your Weather Reach Receiver.
3. Menu/Select Button is the function key that allows you to view subsequent menus and serves as the enter key when programming the Weather Reach Receiver.
4. Escape button, or Back button is used to view the previous screen.
5. The Manual Override button is used when you need to turn on the sprinklers manually from the sprinkler controller and the Weather Reach Receiver is currently interrupting the system (the red lights are on). Manual Override is effective for one hour. If you need more time for

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manual watering, simply push the Manual Override button again for each additional hour you need.

Lights

6. Two red indicator lights, one for the A Soil Moisture Balance, and one for B, indicating the sprinklers will not come on and will stay lit until watering is needed.
7. A yellow alert light signals a condition that you should be aware of. The alert condition message is displayed on the home screen. Please refer to the Users Guide, page 60 to understand this message.



Navigating your Weather Reach Receiver

The home screen displays the time and date, ET for the last 24 hours, mode status, and will flash alert condition messages.

Your Weather Reach Receiver displays status information and lets you program settings. Start by pressing the Menu/Select button. Once pushed, you can scroll through the five main menu options by using the up and down buttons.

- Weather Info
- Irrigate
- Status
- Mode
- Settings

When you have found the menu you desire to access, press the Menu/Select button again. At this point you can use the up and down arrow buttons to scroll the options within each sub-menu. The Escape button allows you to return to the previous menu.

A Menu card came with your Weather Reach Receiver that reveals the menu options and where they can be found.

Within the Menus of the Weather Reach Receiver, the top line of the display is the Menu heading and the bottom line shows what can be selected and/or changed. The asterisk signifies that this line has more information to scroll upon or that you can change the value after selecting its sub-menu.

For example

```
Menu
*Irrigate
```

Press the Menu/Select button again and the Irrigate menu appears.

```
Irrigate
*ET
```

If you press the Menu/Select button again, you are able to scroll under the ET sub-menu to view the ET readings in the last 24 hours or last 7 days.

```
ET (7 days)
*7 day = 0.96in
```

This means that the ET reading over the last 7 days is 0.96 inches. If you use the up and down arrows, you can see the ET reading in the last 24 hours.

```
ET
*24 Hr = 0.20in
```

The ET reading in the last 24 hours is 0.20 inches. If you press ESC back to the Irrigate menu, you are able to scroll through each sub-menu:

```
Irrigate
*ET
```

```
Irrigate
*A ET Balance
```

```
Irrigate
*B ET Balance
```

```
Irrigate
*Rain
```

You can continue to navigate through each menu listed below.

Menus

Weather Info

Rain

24 Hr= Total measured rainfall recorded for the last 24 hours.

7 Day= Total measured rainfall recorded for the last 7 days.

Air Temperature

Current= The last recorded hourly average temperature.

Day Hi= The day's highest temperature.

Day Lo= The day's lowest temperature.

Wind

Current= The last recorded hourly average wind speed.

Day Hi= The day's highest hourly average wind speed.

Day Lo= The day's lowest hourly average wind speed.

Note: Wind is measured in hourly averages. Peak wind velocity is not displayed.

Humidity

Current= The last recorded humidity.

Day Hi= The day's highest humidity.

Day Lo= The day's lowest humidity.

ET

7 Day= Total ET for the last 7 days.

24 Hr= Total ET for the last 24 hours.

Irrigate

ET

7 Day= Total ET for the last 7 days.

24 Hr= Total ET for the last 24 hours.

A ET Balance

A ET Start= Start Threshold for program A.

Balance= Soil Moisture Depletion Balance for A.

B ET Balance

B ET Start= Start Threshold for program B.

Balance= Soil Moisture Depletion Balance for B.

Rain

24 Hr= Total measured rainfall recorded for the last 24 hours.

7 Day= Total measured rainfall recorded for the last 7 days.

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Status

Irrigate A count= The number of times “A” has watered.

Irrigate B count= The number of times “B” has watered.

Note: This menu allows you to monitor how many times the Weather Reach Receiver has allowed watering either for program A or program B. If watering had occurred 5 times the display would look like this:



```
Irrigate A count
5 Dn 9 Clears
```

You can reset this counter by pressing the down arrow 9 times (“Dn 9 Clears”).

The sub-menus continued in **Status** are

Last Irrigate A= The last time Weather Reach allowed A to water.

Last Irrigate B= The last time Weather Reach allowed B to water.

Last Broadcast= The last time the Weather Reach Receiver received a weather broadcast

Last Interrupt= The last time Weather Reach interrupted the sprinkler system because of rain, freezing temperatures, or high winds.

Broadcast Crop Coefficient= Part of the ET calculation. For more information see the Users Guide, page 42.

Missed Data= The percentage of messages which have been missed in the last 14 days.

Test Counter= Only used during installation.

Mode

Auto ET= This normal mode for automatic operation.

Default ET= If for some unusual reason your Weather Reach Receiver has not received a radio signal for 25 hours, your Weather Reach Receiver will go into Default ET mode. In this mode, the Weather Reach Receiver uses a default setting to make certain your landscape continues to be watered. If you find your Weather Reach Receiver in Default Mode for an extended period of time, please contact your Weather Reach Service Provider. Once the data broadcast resumes, the Weather Reach Receiver will return to Auto ET mode. The default ET value is updated each day based on the average ET for the last 7 days. There is no need to adjust the default value.

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Override= If the Manual Override button was pushed the Weather Reach Receiver is temporarily in a manual override mode.

Off= Setting mode to off turns off all control functions of your Weather Reach Receiver. Your sprinkler controller will continue to water as it is programmed, but **not according to weather conditions**. This will not suspended watering because your sprinkler controller is programmed to continue to irrigate.

Settings

Settings were programmed at the time of installation. Unless you are seeing a dry landscape or too wet landscape, you will not need to make any settings adjustments. If you are seeing too dry or too wet landscapes, please refer to the next section of this manual or the Troubleshooting section of your Users Guide.

Troubleshooting your Weather Reach Receiver

Blank Screen

Step 1: Verify your Weather Reach Receiver is getting power.

Step 2: Check the contrast of the LCD screen. To do this, press the escape button five times and press the up arrow button until the screen becomes readable again.

Step 3: If steps 1 and 2 do not work, please contact your installer or Irrisoft.

You want your sprinkler system to water its next cycle

There may be occasions when, in your judgment, the sprinklers should complete a watering cycle. Check the indicator lights. If the A and B indicator lights are lit, those zones will not come on. When the A or B light is off, then watering will be allowed during the next scheduled cycle.

If the lights are on and you want to allow the next scheduled cycle to come on, then you can adjust the Soil Moisture Depletion Balance to match the programmed A or B Start Threshold.

Step 1: Begin at the home screen and press the Menu/Select button once. Use the arrows buttons until you reach the Irrigate menu.



Step 2: Determine which program sprinkler program you want to run, A or B. Remember the A and B Start Thresholds are specific to types of plants (e.g. lawn and shrubs). Press the

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Menu/Select button again, use the up and down arrows to get to either the A ET Balance or the B ET Balance, depending on which sprinkler program you want to run.

```
Irrigate [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
*A ET Balance [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
```

If you want program A to run, press the Menu/Select button.

Step 3: Use the up arrow to adjust the A Balance to A ET Start, 0.5". By changing the Soil Moisture Depletion Balance, the Weather Reach Receiver will allow your sprinkler system to water a complete cycle.

```
A ET Start = 0.5
Balance = 0.35 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
```

Follow the same steps to change the B Soil Moisture Depletion Balance.

Please note: To allow your sprinkler system to water its next cycle, this change should be made before the ET Window opens. (Please see the definition of ET Window Start and ET Window Length on page 3 of this manual).

Problems with your sprinkler system or landscape

Before making any adjustments to the settings of either your Weather Reach Receiver or your automatic sprinkler controller, make sure that the entire sprinkler system is in good working order. It is important to be certain that there are no broken sprinkler heads or broken pipes affecting the performance of your system. Landscapes and automated sprinkler systems are subject to imperfections that can be corrected. **You may need to contact your landscape installer or sprinkler professional.**

Step 1: Perform a walk through evaluation inspecting your sprinkler system while each zone is running.

Step 2: If problems in the sprinkler system are detected, please fix the problems or call sprinkler professionals to assist you.

Dry or Wet Spots

Dry and wet spots are caused by problems with your sprinkler system or the program in your sprinkler controller.

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Step 1: Check the sprinkler heads near the spot that is dry or wet. It is possible that a broken head or nozzle, or a clogged nozzle needs to be replaced.

Step 2: Check the layout of your sprinkler design. Proper sprinkler designs should ensure head to head coverage. Changing a nozzle size, adding or moving a head may improve distribution coverage.

Step 3: If step 1 and 2 do not solve the problem, check the run-times on your sprinkler controller. Minor sprinkler system inefficiencies may be compensated for by adding additional run-time for that zone where the spot appears.

Please note: Adjust the run-time using a 10% change in the time intervals. Monitor the spots for two weeks after an adjustment has been made. This will help determine what run-time is optimal to prevent dry or wet spots.

Dry or Wet Zones

Zones are the distinct areas in your landscape that are watered by one valve. Dry or wet zones are usually a run-time problem with your sprinkler controller.

Step 1: Check the run-time on your sprinkler controller for this zone. The dry or wet zone can be caused by too little or too much run-time for that zone.

Step 2: Manually water this zone if the zone is too dry to get it the water it needs.

Please note: Adjust the run-time using small intervals of time. This will help determine what run-time is optimal to prevent dry or wet zones.

Dry or Wet Sites

Sites are defined as your entire landscaped area. Dry or wet sites can be caused by a run-time problem programmed in with your sprinkler controller or the A and B Start Thresholds set in your Weather Reach Receiver.

Step 1: If your site is overly dry, allow the Weather Reach Receiver to water by following the steps previously outlined in "**You want your sprinkler system to water its next cycle,**" and allow a few days to see if your landscape improves. If the problem remains, please follow the next steps.

Step 2: Check the run-times on your sprinkler controller. The dry or wet site can be caused by too little or too much run-time for each zone.

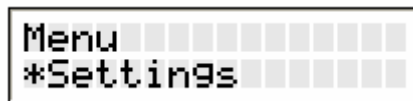
Step 3: Adjust the run-time using small intervals of time. This will help determine what run-time is optimal to prevent dry or wet zones.

Step 4: If steps 1 and 2 do not fix this problem, you should adjust the Start Thresholds in the Weather Reach Receiver.

Step 5: Determine if you need to increase or decrease your Start Threshold. **Increasing the Start Threshold decreases the frequency of watering and decreasing the Start Threshold increases the frequency of watering.** You would want to increase your Start Threshold if you are experiencing a wet site and you would want to decrease your Start Threshold if you have a dry site.

Step 6: Determine which Start Threshold needs to be changed, A or B. Remember Start Thresholds A and B are used for different types of plants, like grass and shrubs.

Step 7: Increase or decrease the Start Threshold. Begin at the home screen and press the Menu/Select button once. Use the arrow buttons until you reach the Settings menu.



```
Menu
*Settings
```

Press the Menu/Select button again, and then use the arrow buttons to scroll to the ET sub-menu.



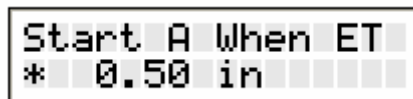
```
Settings
*ET
```

Press the Menu/Select button again, and then use the arrow buttons to scroll until you reach this screen.



```
ET
*Start A When ET
```

If you need to change the A Start Threshold, press the Menu/Select button.



```
Start A When ET
* 0.50 in
```

Use the arrow buttons to increase or decrease the threshold.

Remember ESC allows you to go back to the previous screen. If you need to change the B Start Threshold, use the arrow buttons to scroll until the ET sub-menu below.

Repeat the same steps as above to increase or decrease the B Start Threshold.

ET Window Start and ET Window Length

If you change the start times programmed in the sprinkler controller, the ET Window Start or the ET Window Length in the Weather Reach Receiver may need to be adjusted.

Step 1: Check your sprinkler controller to see when and how long it is programmed to water.

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Step 2: Check your Weather Reach Receiver to see if the ET Window Start corresponds to the time programmed on your sprinkler controller.

Begin from the home screen. Press the Menu/Select button once and then use the arrow buttons to scroll until you reach the Settings menu.

```
Settings
*ET
```

Press the Menu/Select button again and then use the arrow buttons to scroll to the ET sub-menu until you reach this screen.

```
ET
*ET Window Start
```

Press the Menu/Select button to view the start time that your Weather Reach Receiver thinks your sprinkler controller is programmed to begin.

```
ET Window Start
* 5:00 am
```

If this start time, 5:00 am for example is not correct, use the arrows to match the time with your sprinkler controller.

Step 3: Check your Weather Reach Receiver to see if the ET Window Length corresponds to the time programmed on your sprinkler controller. From the ET Window Start Screen press Esc to go back to the previous menu.

Press the down button once to get to the ET Window Length menu.

```
ET
*ET WindowLength
```

Press the Menu/Select button. The screen below displays how many hours that your Weather Reach Receiver thinks your irrigation sprinkler controller uses to complete watering of all your zones within your site.

```
ET Window Length
* 6 hours
```

If this length of time, 6 hours for example is not correct, use the arrows to match the time with your sprinkler controller.

Conclusion

This Basic Operation Manual should provide you with the knowledge needed to fine tune the use of your Weather Reach Receiver, giving you a healthy landscape while conserving water.

The Weather Reach Receiver is a precision instrument that uses proven science and technology. If used properly the Weather Reach Receiver will automatically manage your sprinkler system. It is one component in the sprinkler system that consists of the sprinkler controller, valves, and sprinkler heads. It is necessary that all of the components in your sprinkler system are efficient to achieve a beautiful and healthy landscape. If problems occur seek professional help to identify the problem and determine the appropriate solution.

Thank you for purchasing your Weather Reach Receiver.

Your installer and Irrisoft are committed to helping you use this valuable tool. Please contact them with any questions you may have.