



*We Make Water Work*

NEVERSTOP  
IRRIGATION PTY LTD

## **Information / Maintenance Manual.**

Irrigation Package

Date issued 12 December 2019

# *Ryde Public School*

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# Introduction

Thank you for choosing Never Stop Water to install the irrigation system and services at the Ryde Public School.

The purpose of this detailed Handover Kit / Manual is to provide the necessary documentation for the efficient and safe use of the irrigation equipment installed, in accordance to manufacturer's recommendations.



## Our Company

We are pleased to introduce Neverstop Water, a group of companies dedicated to water sensitive urban design, construction and maintenance. Put simply, we make water work.



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The Neverstop Water Group originally formed as divisions of Neverstop Irrigation Pty Ltd (2003). In 2011 Neverstop Water Harvesting Pty Ltd and Neverstop Water Pty Ltd formed to tie in the group of companies as a 'Total Water Management Solution' from harvesting stormwater through civil drainage and stormwater improvement or harvesting excess turf water via sand slit drainage, divert store it in dams or underground tanks, to pumping, treating and distributing it for irrigation, including rebuilding your sports turf surface, we have the skillset to get the job done.

To date we have undertaken works for Local Government, Sports Organisations, Golf Courses, Commercial and Industrial, Tier 1 Builders, Civil and Landscapers right through to Schools and Domestic clients in excess of \$1mil contracts. We also provide consulting in order to assist in value engineering, planning and staging of your project to meet any budget along with life cycle costing to maintain the integrity of your investment.

We currently employ over 30 field staff in a variety of trades from irrigation, plumbing, electrical, HET and civil drainage and collectively we ensure we have the right resource onsite at all times.

The last 12 months has seen a new focus on delivering a specialist service team to the diverse water market. Our existing business's have developed strong construction industry relationships over the years and now with a dedicated team providing reactive service and preventative maintenance, we will keep your investment online and working for you.



## Standards



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- Supply and Install an automated Irrigation System.
- Certification of the design and construction to relevant NCC and Australian Standards including but not limited to: AS4902:2000; and
- Landscape construction works to relevant NCC and Australian Standards including but not limited to: AS2601, AS2303:2015, AS4419:2003 and AS/NZS 3500.1.





# Emergency Contact Information

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Contact: 1 300 NSWATER  
Email: [info@nswater.com.au](mailto:info@nswater.com.au)

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Project Manager:	Zac Cracknell	0420 227 884	<a href="mailto:zac@nswater.com.au">zac@nswater.com.au</a>



[nswater.com.au](http://nswater.com.au)

# Quality Assurance Compliance

PROJECT Ryde Public School (Smalls Rd)  
CONSULTANTS Landscape Solutions

I Blair Taylor, being duly authorised by Neverstop Irrigation P/L, the sub contractor for the above described works hereby certify that all works have been carried out and materials supplied for this contract in strict accordance with the consultants specification, drawings and revisions provided by as authorised and approved including written approval/acceptance of changes and amendments to the scope during construction.

Sincerely,



Blair Taylor  
DIRECTOR  
Neverstop Irrigation P/L





## Warranties Certificate of Guarantee

- Three year warranty on all parts and labour, faulty product only.
- Subject to manufacturers conditions.
- Repair and damage to property caused by Neverstop Water Pty Ltd
- Works Included, as per works specification and programme.
- Subject to weather

System must be serviced by NSW annually, to qualify extended warranty.





# As Built Drawings

As built plans will be issued at a later date  
from the issued date of the Manual



# Manufacturer Technical Literature

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# Section 1.1 Controls

# Irrigation



IRRIGATION



# Introduction

## Welcome to Rain Bird

Thank you for choosing Rain Bird's ESP-TM2 controller. In this manual are step by step instructions for how to install and operate the ESP-TM2.



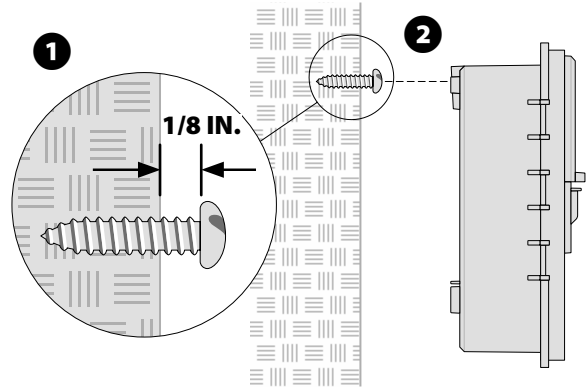
## Controller Features

Feature	Description
Maximum Stations	12
Simultaneous Stations	1 plus master valve
Start Times	4
Programs	3
Program Cycles	Custom Days, Odd, Even and Cyclic
Permanent Days Off	Per program
Master Valve Control	On/Off per station
Rain Delay	Supported
Rain/Freeze Sensor	Supported
Rain Sensor Control	Global or by station
Seasonal Adjust	Global or by program
Manual Station Run	Yes
Manual Program Run	Yes
Manual Test All Stations	Yes
Station Advance	Yes
Short Detect	Yes
Delay Between Stations	Yes
Accessory Port	Yes (5 pin)
Save & Restore Programming	Yes

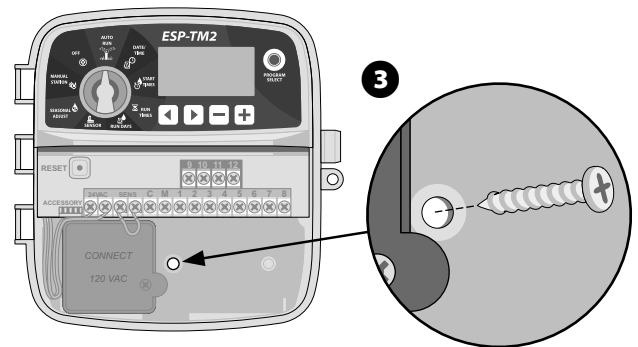
# Installation

## Mount Controller

- 1 Drive a mounting screw into the wall, leaving an 1/8 inch gap between the screw head and the wall surface (use the supplied wall anchors if necessary), as shown.
- 2 Locate the keyhole slot on back of the controller unit and hang it securely on the mounting screw.



- 3 Remove the wiring bay cover on the lower part of the controller unit, and drive a second screw through the open hole inside the controller and into the wall, as shown.



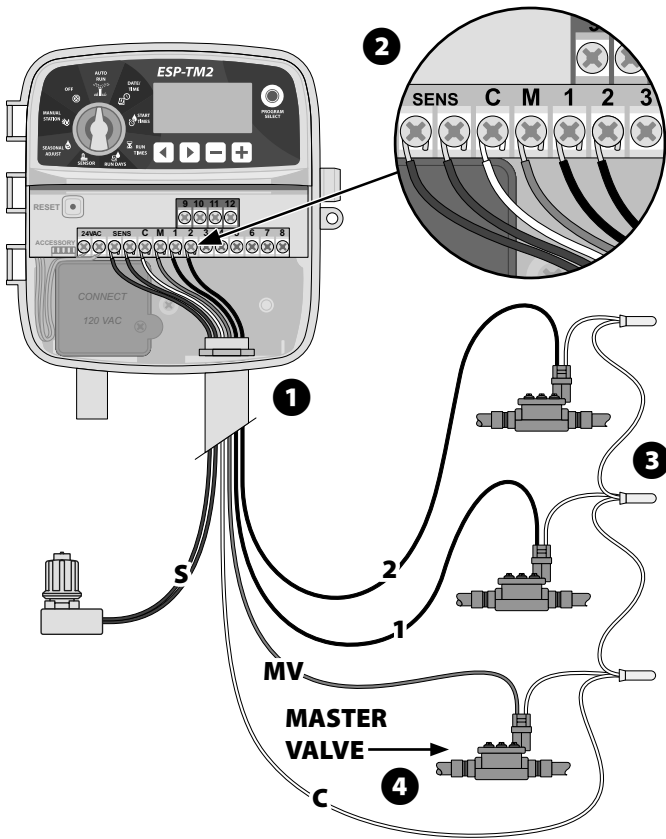
**NOTE:** Choose a suitable mounting location close to a 120 VAC wall outlet.

# Wiring Connections

## Connect Valves

- 1 Route all field wires through the opening at the bottom of the unit, or through the knock-out in back of the unit. Attach conduit if desired, as shown.
- 2 Connect one wire from each valve to one of the numbered station terminals (1-12) on the controller, as shown.
- 3 Connect a field common wire (C) to the common terminal (C) on the controller. Then connect the remaining wire from each valve to the field common wire, as shown.

**NOTE:** The ESP-TM2 controller supports one valve solenoid per station terminal.



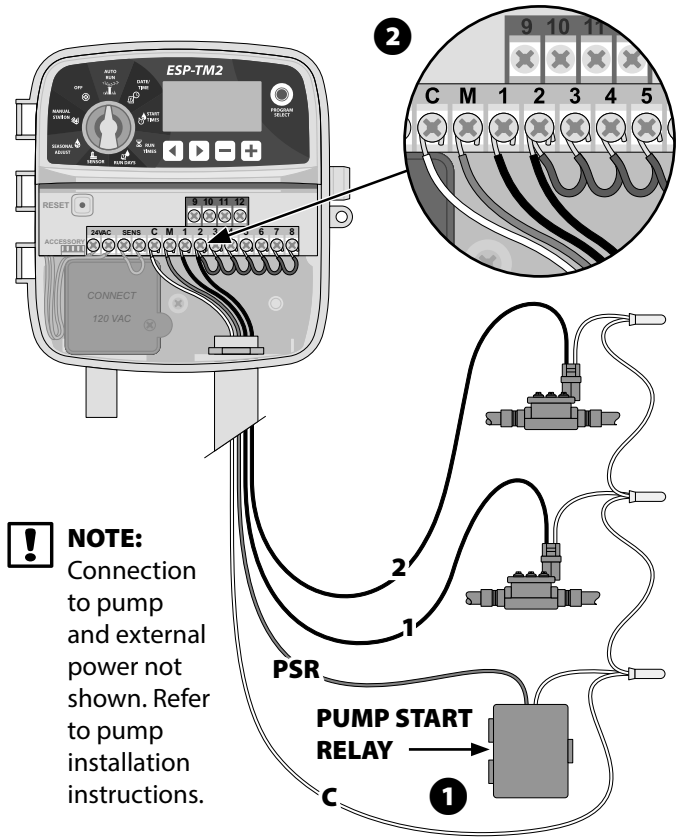
## Connect Master Valve (optional)

- 4 Connect a wire from the master valve (M) to the master valve terminal (M) on the controller. Then connect the remaining wire from the master valve to the field common wire, as shown.

## Connect Pump Start Relay (optional)

The ESP-TM2 can control a pump start relay, to turn the pump on and off as needed.

- 1 Connect a wire from the pump start relay (PSR) to the master valve terminal (M) on the controller. Then connect another wire from the pump start relay to the field common wire, as shown.
- 2 To avoid the possibility of damage to the pump, connect a short jumper wire from any unused terminal(s) to the nearest terminal in use, as shown.



**NOTE:** Connection to pump and external power not shown. Refer to pump installation instructions.

**NOTE:** The ESP-TM2 controller DOES NOT provide power for a pump. The relay must be wired according to manufacturer instructions.

Only the following Rain Bird pump start relay models are compatible with the ESP-TM2:

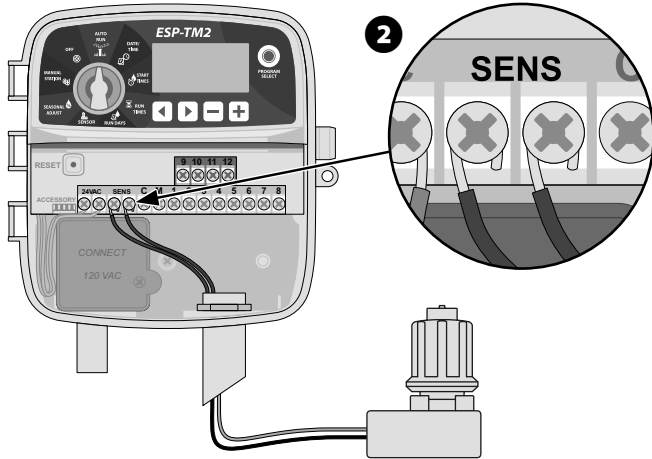
Description	Model #	Volts
Universal Pump Relay	PSR110IC	110V
Universal Pump Relay	PSR220IC	220V

## Connect Rain/Freeze Sensor (optional)

The ESP-TM2 controller can be set to obey or ignore a rain sensor.

Refer to the Rain Sensor section under Advanced Programming.

- 1 Remove the yellow jumper wire from the SENS terminals on the controller.
- 2 Connect both rain sensor wires to the SENS terminals, as shown.



**NOTE:** Do not remove the yellow jumper wire unless connecting a rain sensor.

**NOTE:** Rain Bird controllers are only compatible with normally closed rain sensors.

**NOTE:** For wireless rain/freeze sensors, refer to installation instructions for sensor.

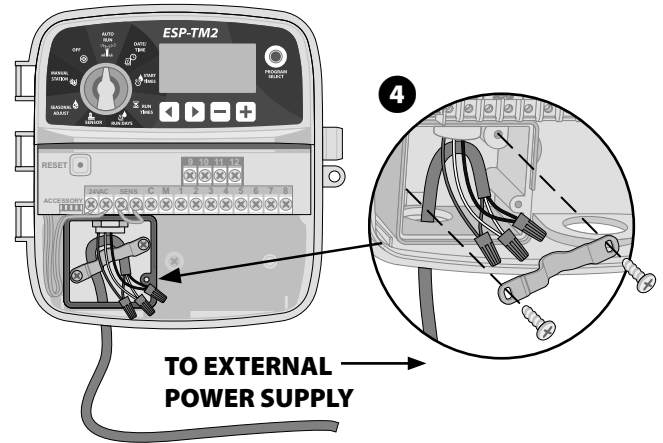
**WARNING:** Do not apply power until you have completed and checked all wiring connections.

## Connect Custom Wiring (optional)

If desired, the provided 120 volt power cord can be removed and replaced with a custom wiring.

To remove the factory installed power cord and connect custom wiring:

- 1 Ensure that AC power is disconnected.
- 2 Remove the controller junction box cover and disconnect the power cord to the unit.
- 3 Remove the factory installed power cord by loosening the 2 screws securing the metal strain-relief bar, as shown.
- 4 Connect the external power supply wires using the wire nuts and then re-secure the metal strain relief bar by tightening the 2 screws.



### Power Wiring Connections (120VAC)

Black supply wire (hot) to the black transformer wire

White supply wire (neutral) to the white transformer wire

Green supply wire (ground) to the green or green-yellow transformer wire

- 5 Verify that all wiring connections are secure and then replace the junction box cover.

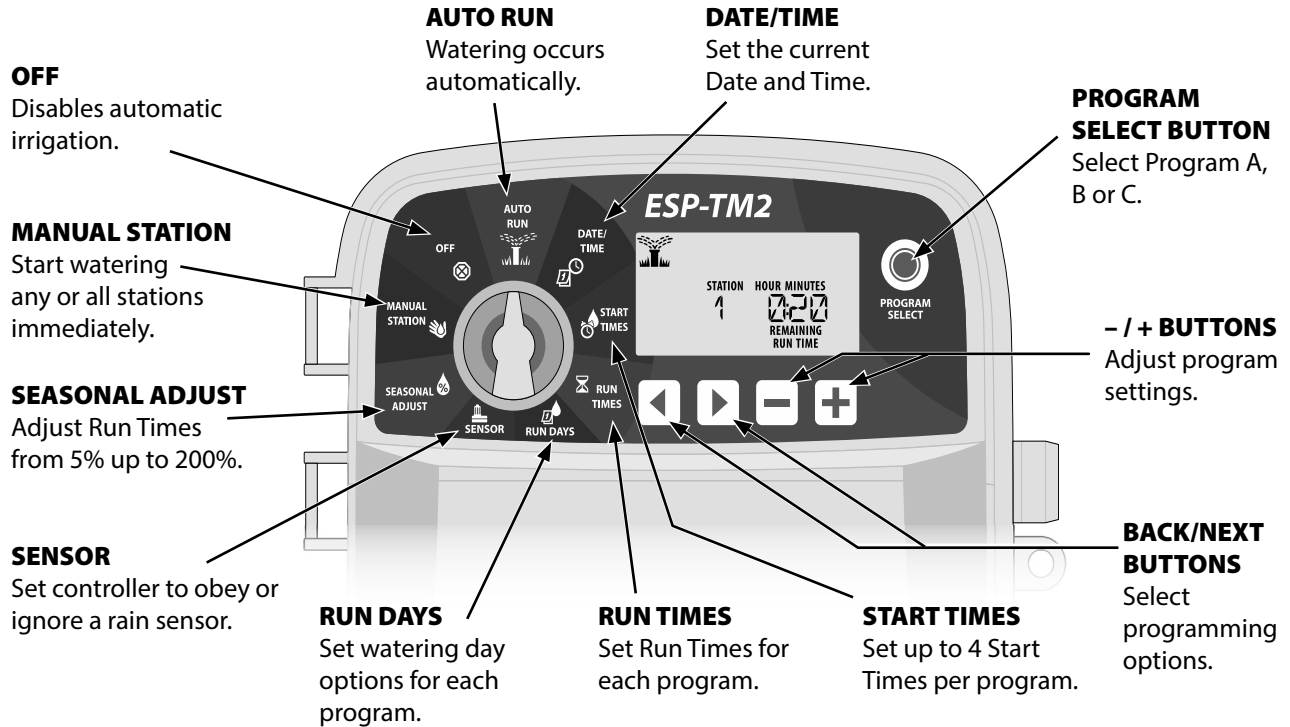
**CAUTION:** The strain-relief bar must be re-secured for the unit to function properly.

**WARNING:** DO NOT apply power until you have completed and checked all wiring connections.



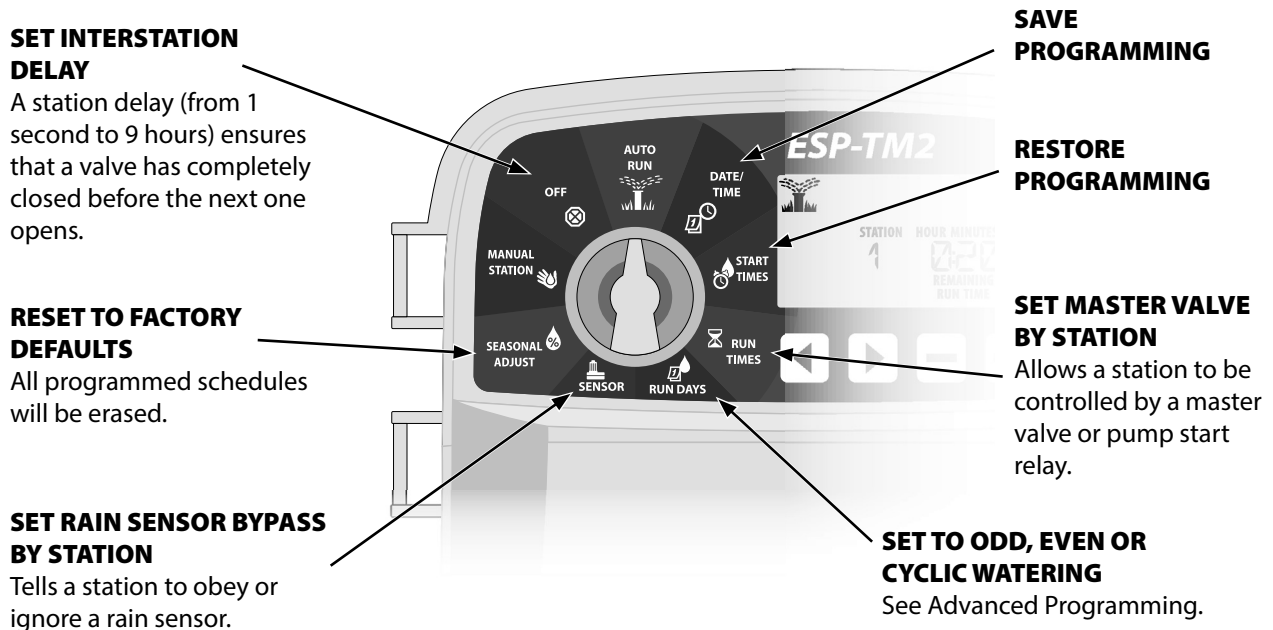
# Controls and Indicators

Turn the dial to select programming features.




# Special Features

- Turn the dial to the desired position.
- Press and hold ◀ and ▶ at the same time.



# Basic Programming

## 1 Set Date and Time

 Turn the dial to **DATE/TIME**.


- Press ◀ or ▶ to select the setting to change.
- Press – or + to change the setting value.
- Press and hold – or + to accelerate adjustments.

**To change the time format (12 hour or 24 hour):**

- With **MINUTES** blinking, press ▶.
- Press – or + to select the desired time format, then press ▶ to return to the time setting.

## 2 Set Watering Start Times


**Up to four Start Times are available for each program.**

 Turn the dial to **START TIMES**.

- Press **Program Select** to choose the desired Program (if necessary).
- Press ◀ or ▶ to select an available Start Time.
- Press – or + to set the selected Start Time (ensure the AM/PM setting is correct).
- Press ▶ to set additional Start Times.

## 3 Set Station Run Times

**Run Times can be set from one minute up to six hours.**


 Turn the dial to **RUN TIMES**.

- Press **Program Select** to choose the desired Program (if necessary).
- Press ◀ or ▶ to select a Station.
- Press – or + to set the Run Time for the selected Station.
- Press ▶ to set additional Station Run Times.


## 4 Set Watering Days

### Custom Days of the Week

**Set watering to occur on specific days of the week.**

 Turn the dial to **RUN DAYS**.

- Press **Program Select** to choose the desired Program (if necessary).
- Press – or + to set the selected (blinking) day as either **ON** or **OFF**, and to automatically move to the next day.
- You can press ◀ or ▶ at any time to move the cursor to the previous or next day.

 **CAUTION:** If Sunday is selected, ▶ will enter and activate Cyclic Watering (see the Advanced Programming section). If this is not desired, press the ◀ button to return to watering by Custom Days.

## Manual Watering Options

### Test All Stations

**Start watering immediately for all programmed stations.**

 Turn the dial to **MANUAL STATION**.

- Press **—** or **+** to set a Run Time.
- Press and hold **▶** or turn the dial to **AUTO RUN** to start manual station test.

### Run a Single Station


**Start watering immediately for a single station.**

 Turn the dial to **MANUAL STATION**.

- Press **▶** to display the MANUAL STATION screen.
- Press **◀** or **▶** to select a Station.
- Press **—** or **+** to set a Run Time.
- Press and hold **▶** or turn the dial to **AUTO RUN** to start the selected Station.

### Run a Single Program

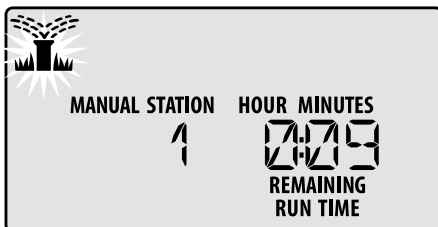
**Start watering immediately for one program.**

 Turn the dial to **AUTO RUN**.

- Press **Program Select** to choose the desired Program (if necessary).
- Press and hold **▶** to start the selected Program.

#### **During Manual Watering:**

The display shows a blinking sprinkler symbol, the active Station Number or Program, and the Remaining Run Time.

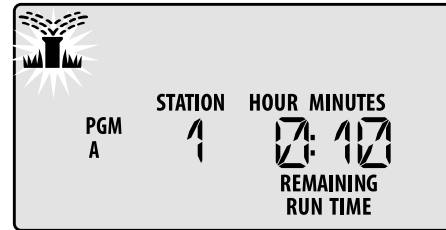


- To cancel manual watering, turn the dial to **OFF** for three seconds until the screen shows OFF.


## Normal Operation


### AUTO RUN

During watering, the display shows a blinking sprinkler symbol, the current Program and the Remaining Run Time.



### OFF


Turn the dial to  **OFF** to stop automatic irrigation or to cancel all active watering immediately.

 **CAUTION:** Watering will NOT occur if the controller remains in **OFF**.

# Advanced Programming

## Odd or Even Calendar Days


Set watering to occur on all **ODD** or **EVEN** calendar days.

 Turn the dial to **RUN DAYS**.

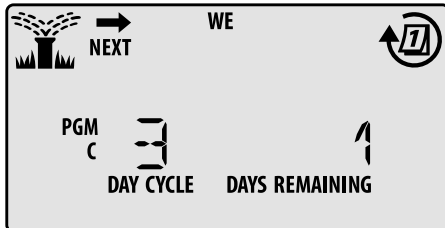
- Press **Program Select** to choose the desired Program (if necessary).
- Press and hold ◀ and ▶ at the same time until **ODD** or **EVEN** is displayed.

## Cyclic Days

Set watering to occur at specific intervals, such as every 2 days, or every 3 days, etc.

 Turn the dial to **RUN DAYS**.


- Press **Program Select** to choose the desired Program (if necessary).
- On the **Custom Days** screen, press ▶ until the **Cyclic** screen is displayed (after SUN).
- Press – or + to set the desired DAY CYCLE, then press ▶
- Press – or + to set the DAYS REMAINING before the cycle begins. The NEXT watering day updates on the display to indicate the day that watering will start as shown.



## Rain Sensor

Set the controller to obey or ignore a rain sensor.

When set to **ACTIVE**, automatic irrigation will be suspended if rainfall is detected. When set to **BYPASS** all programs will ignore the rain sensor.

 Turn the dial to **SENSOR**.

- Press – or + to select **ACTIVE** (obey) or **BYPASS** (ignore).

 **NOTE:** See **Special Features** to set Rain Sensor Bypass by Station.

## Seasonal Adjust

Increase or decrease program run times by a selected percentage (5% to 200%).

**Example:** If the Seasonal Adjust is set to 100% and the station Run Time is programmed for 10 minutes, the station will run for 10 minutes. If the Seasonal Adjust is set to 50%, the station will run for 5 minutes.

 Turn the dial to **SEASONAL ADJUST**.

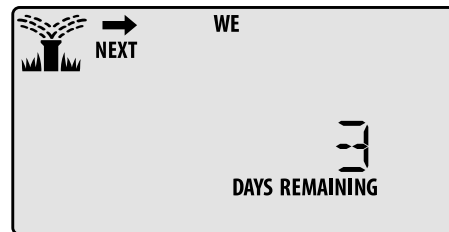
- Press – or + to increase or decrease the global percentage setting.
- To adjust an individual Program, press **Program Select** to choose the desired Program (if necessary).

## Delay Watering


Suspend watering for up to 14 days.

 Turn the dial to **AUTO RUN**, then press and hold +

- Press – or + to set the DAYS REMAINING. The next watering day will update on the display to indicate when watering will resume.




- To cancel a Rain Delay, set the DAYS REMAINING back to 0.

 **NOTE:** When the delay expires, automatic irrigation resumes as scheduled.

## Permanent Days Off

Prevent watering on selected days of the week (for Odd, Even or Cyclic programming only).

 Turn the dial to **RUN DAYS**.

- Press **Program Select** to choose the desired Program (if necessary).
- Press and hold **Program Select**.
- Press **-** to set the selected (blinking) day as a Permanent Day Off or press **+** to leave the day **ON**.

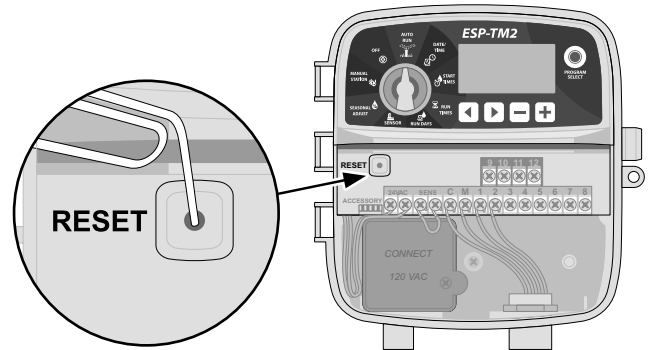


## Options

### Reset Button

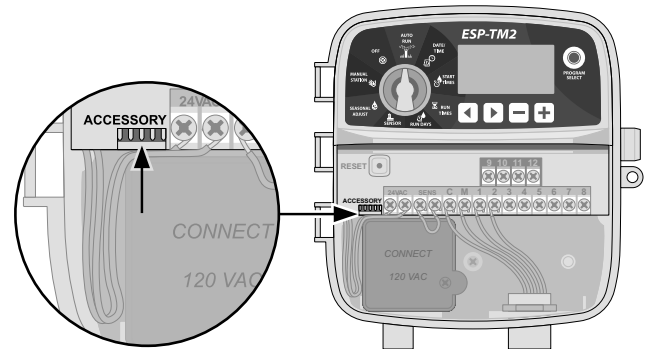
If the controller is not working properly, you can try pressing **RESET**.

- Insert a small tool such as a paper clip, into the access hole and press until the controller is reset. All previously programmed watering schedules will remain stored in memory.




### Remote Accessories

A 5 pin accessory port is available for Rain Bird approved external devices.



# Troubleshooting


## Watering Issues


Problem	Possible Cause	Possible Solution
<b>Watering icon on the display is flashing, but the system is not watering</b> 	Water supply issue.	Verify there is no disruption to the main water line and that all other water supply lines are open and functioning.
	Wiring is loose, not properly connected or damaged.	Check that wiring is securely connected at the controller and in the field. Check for damage and replace if necessary. Check wiring connections and replace with watertight splice connectors if needed.
<b>Automatic and/or Manual Watering will not start</b>	Connected rain sensor may be activated.	Let the rain sensor dry out or else disconnect it from the controller terminal block and replace it with a jumper wire connecting the two SENS terminals.
	Jumper wire connecting the two SENS terminals may be missing or damaged.	Jumper the two SENS terminals on the controller terminal block by connecting them with a short length of 14 to 18 gauge wire.
	Solenoid or master valve is shorted.	Confirm short message on the display. Correct the issue in the wiring. Clear the message by testing watering at the shorted valve or by pressing the ► button.
<b>Excessive watering</b>	Programs may have multiple start times that were set unintentionally	Programs (A, B or C) only require a single start time in order to run. Separate start times are not required for each valve.

## Electrical Issues


Problem	Possible Cause	Possible Solution
<b>Display is blank.</b>	Power not reaching the controller.	Verify the main AC power supply is securely plugged in or connected and working properly.
		Verify the orange power supply wires are connected to the controller "24 VAC" terminals.
<b>Display is frozen and controller will not accept programming.</b>	An electrical surge may have interfered with the controller's electronics.	Unplug the controller for 2 minutes, then plug it back in. If there is no permanent damage, the controller should accept programming and resume normal operation.
		Press and release the RESET button.


## Safety Information

 **WARNING:** This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capacity, or lack of experience and knowledge unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

 **WARNING:** Special precautions must be taken when valve wires (also known as station or solenoid wires) are located adjacent to, or share a conduit with other wires, such as those used for landscape lighting, other "low voltage" systems or other "high voltage" power.

Separate and insulate all conductors carefully, taking care not to damage wire insulation during installation. An electrical "short" (contact) between the valve wires and another power source can damage the controller and create a fire hazard.

 **WARNING:** All electrical connections and wiring runs must comply with local building codes. Some local codes require that only a licensed or certified electrician can install power. Only professional personnel should install the controller. Check your local building codes for guidance.

 **CAUTION:** Use only Rain Bird approved accessory devices. Unapproved devices may damage the controller and void warranty.

For a list of compatible devices go to: [www.rainbird.com](http://www.rainbird.com)

## Disposal of Electronic Waste



In compliance with European Directive 2002/96/CE and EURONORM EN50419:2005, this device must not be thrown away with household garbage. This device must be the object of an appropriate, selective removal procedure in order to recuperate it.



**NOTE:** Date and time are retained by a lithium battery which must be disposed of in accordance with local regulations.

## Questions?

### Scan the QR code

to visit [www.rainbird.com/esptm2](http://www.rainbird.com/esptm2) for help setting up and operating the Rain Bird ESP-TM2 Controller



Call Rain Bird toll free Technical Support at **1-800-724-6247** (USA and Canada only)





### FCC Part 15

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 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 Corporation 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.
- This class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.  
*Cet appareil Numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.*

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690299-01 Rev.05/16



# Section 1.2 Rain Sensor

# Irrigation



IRRIGATION





## WR2 Wireless Sensor User Manual

Manual del usuario  
Manuel de l'utilisateur  
Benutzerhandbuch  
Manuale dell'utente

Gebruikershandleiding  
Manual do Utilizador  
Εγχειρίδιο χρήσης  
Kullanıcı Kılavuzu



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# Safety Information

## Symbols used in this manual:



Symbol alerts the user to the presence of un-insulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



Symbol alerts the user to the presence of important operating or maintenance (servicing) instructions.

## Interference With Other Electronic Devices

All radio transmitters broadcast energy through the air. This energy may interfere with other electronic devices in close proximity to the WR2 Wireless Sensor. To lower the risk of electronic interference:

- Do not place sensitive electronics (computers, telephones, radios, etc.) in close proximity to the Controller Interface or Sensor.
- Use clip-on ferrite sleeves on the connection or power cables of affected electronic device(s).



**THE IRRIGATION CONTROLLER / TIMER SHOULD BE ISOLATED VIA A CIRCUIT BREAKER OR CUTOFF SWITCH.**



**BATTERIES REMOVED FROM THE SENSOR SHOULD BE DISPOSED OF IN ACCORDANCE WITH LOCAL REGULATIONS.**



**CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.**



## Introduction

### Congratulations on your purchase of the WR2 Wireless Sensor.

**The Rain Bird Wireless Rain Sensor** is designed for residential and commercial irrigation systems. It saves water and extends irrigation system life by automatically sensing precipitation and interrupting irrigation during rain and low temperature events.

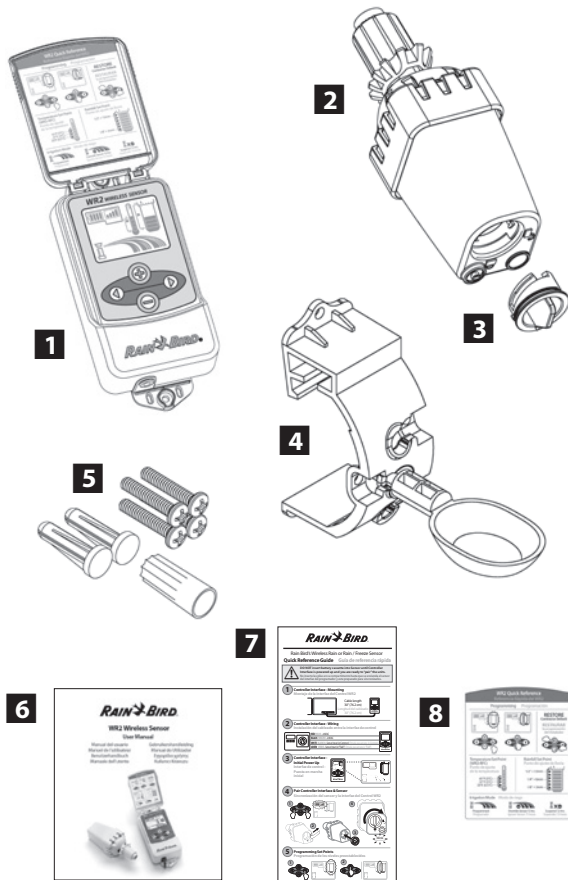
Programming logic can suspend irrigation using the “Quick Shut Off” feature or when the amount of rainfall exceeds the rainfall set point. Likewise, the **Wireless Rain / Freeze Sensor** will suspend irrigation when the sensor temperature reading is below the temperature set point.

At Rain Bird, we are focused on developing products and technologies that use water in the most efficient manner possible. The rain and rain / freeze sensor illustrate Rain Bird’s commitment to this Intelligent Use of Water. The product is part of Rain Bird’s family of water conservation solutions that include the Soil Moisture Sensor, U-Series and Rotary Nozzles, the ESP-SMT and ET Manager Controllers.

**Please read through these instructions in their entirety or refer to the programming demo ([www.rainbird.com/WR2](http://www.rainbird.com/WR2)) before installing your WR2 Wireless Sensor. Also, reference your irrigation system controller / timer installation instructions for the proper connection of rain sensors.**

## WR2 Components

- 1 Controller Interface
- 2 Sensor
- 3 Battery Cassette and Lithium CR2032 Battery
- 4 Sensor Mounting Bracket Assembly
- 5 Mounting Hardware
- 6 User's Manual
- 7 Quick Reference Guides
- 8 WR2 Quick Reference Labels



**NOTE:** Tools needed for installation: drill, drill bit, and Phillip's head screwdriver

## WR2 Benefits

- All settings are programmed through the Controller Interface device
- Large easy to understand icons communicate irrigation mode and sensor status.
- Sensor LED indicator enables one-person setup, reducing installation time
- Battery is easy to install / replace
- Aesthetic appearance - no external antennas
- Easy to install, self-levelling sensor bracket mounts to flat surfaces or rain gutters
- "Quick Shut Off" interrupts active irrigation cycle during a rain event
- Enhanced antenna array provides superior signal reliability that overcomes most line-of-sight obstructions.

### 1 Mounting the Controller Interface

Choose a location near the irrigation controller / timer.



**The cable harness is 30 inches (76.2 cm) long, so before mounting the device, ensure the wires easily reach the irrigation controller's connection terminals.**

- Select a flat surface adjacent to the irrigation controller.
- For best performance, the Controller Interface should be installed at least five feet (1.5m) above the ground.
- It is recommended that the Controller Interface be installed away from sources of electrical interference (such as transformers, generators, pumps, fans, electrical meter boxes) and metal objects to maximize communication range.
- Use the mounting hardware supplied. Attach the Controller Interface to the wall.





## 2 Wiring the Controller Interface to the Irrigation Controller

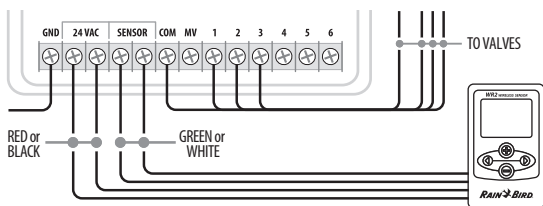


This unit is designed to be installed in conjunction with 24VAC circuits only. Do not use with 110 or 220/230 VAC circuits.



The Controller Interface has 4 wires that must be connected to the irrigation controller / timer. If your timer does not have an internal 24VAC power source, you will need to splice the red and black Controller Interface wires to a 24VAC transformer (example: Rain Bird part number 63747301S).

### Controllers with sensor inputs (with or without pump start / master valve)

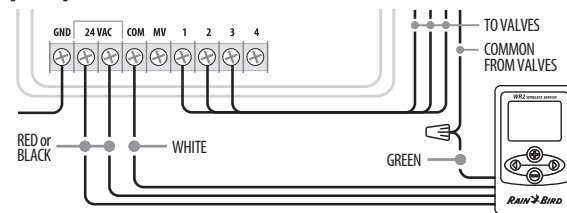


1. Disconnect power to the irrigation controller.
2. Connect the red and black wires to the 24 volt AC power on the irrigation controller.
3. If present, remove "jumper wire" between sensor terminals.
4. Connect the white and green wires to the sensor inputs.
5. Reconnect power to the irrigation controller.



Ensure the sensor switch on the irrigation controller panel is in the active position.

### Controllers with no sensor inputs (with or without pump start / master valve)

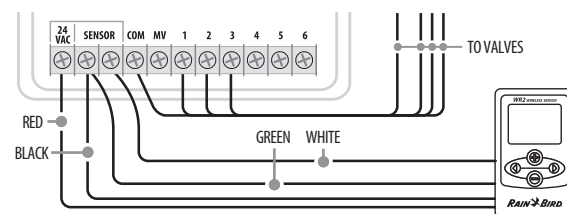


1. Disconnect power to the irrigation controller.
2. Connect the red and black wires to the 24 volt AC power on the irrigation controller.
3. Disconnect the wires from the Common terminal on the controller.
4. Connect the green wire to these disconnected wires using a wire connector.
5. Connect the white wire to the Common terminal on the controller.
6. Reconnect power to the irrigation controller.



Ensure the sensor switch on the irrigation controller panel is in the active position.

### ESP-MC and ESP LX Modular Controllers



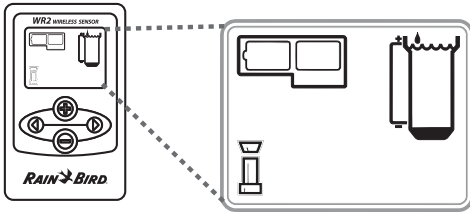
1. Disconnect power to the irrigation controller.
2. Connect the red wire to the 24 volt AC terminal on the irrigation controller.
3. Connect the green and black wires to one of the sensor terminals.
4. Connect the white wire to the other sensor terminal on the controller.
5. Reconnect power to the irrigation controller.



Ensure the sensor switch on the irrigation controller panel is in the active position.

### 3 Initial Power Up

After power is applied, the Controller Interface displays the following icons.



## Controller Interface Display Icons

### Sensor Status

**Battery Life Remaining:** Four (4) dark bars indicate full battery strength. Replace battery when only one (1) bar remains.



**Signal Strength:** Illustrates strength of the radio signal between Sensor and Controller Interface. Four (4) dark bars indicate maximum signal strength.



### Sensor Indicator / Pairing

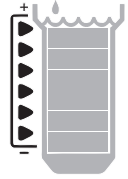
**Status:** The Sensor and Controller Interface synchronize communication addresses. Battery Life and Signal Strength will flash while synchronizing, and then stop when paired.



## Environmental Conditions

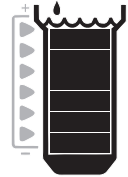
### Rainfall Set Point:

Select from six (6) set points ranging from 1/8" (3mm) to 1/2" (13mm). A set point closer to the top of the icon allows for more precipitation to occur before irrigation is suspended.



### Rainfall Indicator:

Illustrates approximate amount of rainfall relative to Rainfall Set Point.



### Rainfall Trip Indicator:

Displays when the Sensor has suspended irrigation due to "Quick Shut Off" or satisfying rainfall set point.



### Temperature Set Point (Rain/Freeze Sensor only):

Select from three (3) set points: 33°F (0.5°C), 37°F (3°C), or 41°F (5°C). Selecting a lower set point allows irrigation at lower temperatures.



### Temperature Indicator (Rain/Freeze Sensor only):

Illustrates approximate temperature relative to Temperature Set Point



### Temperature Trip Indicator (Rain/Freeze Sensor only):

Only displays when the Sensor has suspended irrigation due to temperature reading that is below the temperature set point.



## Irrigation Modes

### Programmed Irrigation:

WR2 Wireless Sensor is actively managing the irrigation controller / timer. Once a set point is satisfied by environmental conditions, or the "Quick Shut Off" feature is activated, irrigation is suspended. An X and corresponding trip indicator (rainfall, temperature, or both) will automatically display when irrigation is suspended.



### Suspend Irrigation for 72 Hours:

User has elected to temporarily suspend irrigation for 72 hours. System will automatically resume programmed irrigation mode after 72 hours (Note: X and trip indicator will be displayed when returning to programmed irrigation mode if set points are satisfied).



### Override Sensor for 72 Hours:

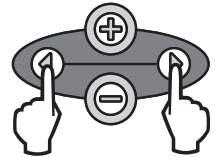
User has elected to permit irrigation in accordance with the timer schedule regardless of environmental conditions (i.e. rainfall or low temperature is detected by the sensor). System will automatically resume programmed irrigation mode after 72 hours (Note: X and trip indicator will be displayed when returning to programmed irrigation mode if set points are satisfied).



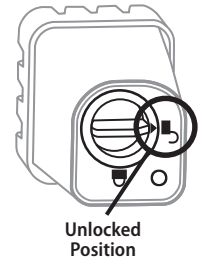
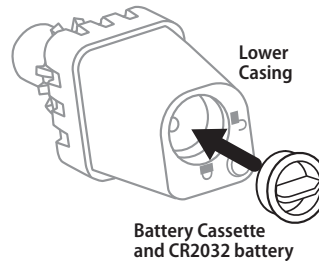
## 4 Synchronize the Sensor and Controller Interface

After the Controller Interface is wired to the irrigation timer, the Sensor and Controller Interface need to establish a radio communication link. When the link is established, the Sensor and Controller Interface are considered "paired."

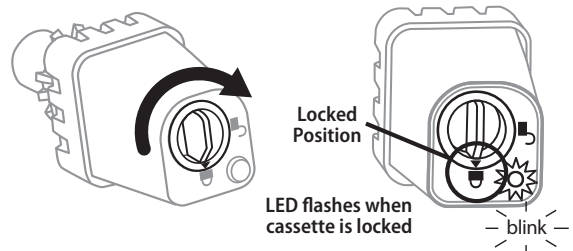
1. On the Controller Interface, push and hold both arrow buttons simultaneously to begin the installation sequence.



2. After the "Sensor Indicator / Pairing Status" icon flashes, remove the label from the bottom of the sensor.
3. The flashing "Sensor Indicator / Pairing Status" icon prompts you to insert the battery cassette with battery into the Sensor lower casing as shown. Align the arrow on the battery cassette with the unlocked indicator on the bottom of the Sensor.



4. Rotate the battery cassette clockwise until the arrow points toward the locked indicator. The light on the bottom of the Sensor will blink once to indicate that the sensor is now powered up.

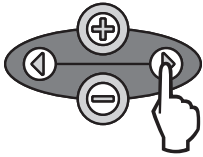


- The Sensor is successfully paired to the Controller Interface when the "Sensor Indicator / Pairing Status" icon stops flashing. Once paired, sensor signal strength and battery life are communicated via the Controller Interface icons. Additionally, a blinking light on the bottom of the Sensor indicates signal strength for 20 minutes immediately following successful pairing. These "self test" features are an indication that your WR2 Wireless Sensor is operational.

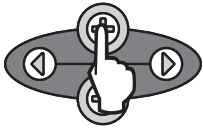
## 5 Programming the Set Points

The WR2 Wireless Sensor allows the contractor to establish rainfall and temperature set points appropriate for local environmental and soil conditions. Alternately, the contractor may elect to use the "Standard Setting": temperature 37°F (3°C), rain fall ¼" (6mm) and "programmed irrigation" mode. The "Standard Setting" is programmed at the factory and is active after successful pairing.

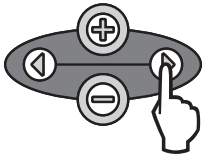
### Rainfall Set Point



1. Push left or right arrow on keypad to navigate to the Rainfall Indicator icon.

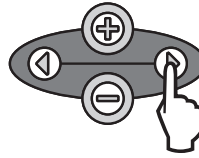


2. When the Rainfall Indicator icon flashes, press the + / - button on the keypad to set programming details. Each press of the button adjusts the set point. Select from six (6) set points ranging from 1/8" (3mm) to 1/2" (13mm).

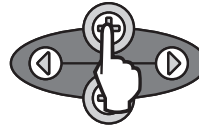


3. Press the left or right arrow to accept programming details and to navigate to next icon.

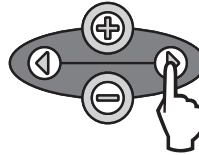
### Temperature Set Point (Rain/Freeze Sensor only)



1. Push left or right arrow on keypad to navigate to the Temperature Indicator icon.

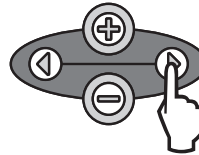


2. When the Temperature Indicator icon flashes, press the + / - button on the keypad to set programming details. Select one of three temperature settings: 33°F (0.5°C), 37°F (3°C), or 41°F (5°C).

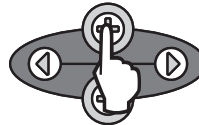


3. Press the left or right arrow to accept programming details and to navigate to next icon.

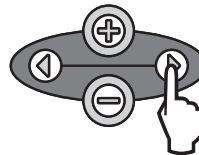
## 6 Programming Irrigation Modes



1. Push left or right arrow on keypad to navigate to the Irrigation Mode icon.



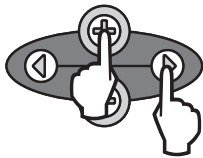
2. When the Irrigation Mode icon flashes, press the + / - button on the keypad to set programming details. Manually set one of three irrigation modes. See Irrigation Modes.



3. Press the left or right arrow to accept programming details and to navigate to next icon.

## 7 Saving, Resetting and Restoring Settings

### Save Contractor Default Settings



Once the Controller Interface is completely programmed, press + and right arrow buttons simultaneously for five (5) seconds to save contractor default setting. All programmed icons will flash in unison one time to indicate program is saved.

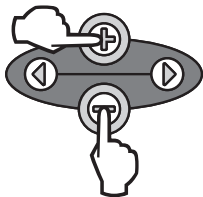
### Reset Contractor Default Settings

The Contractor default setting stores programming details related to rainfall and temperature set points.

Reset and save programming details in accordance with Section 5 and 7.

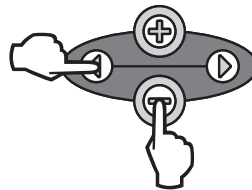
### Restore Contractor Default Settings

If this programming is inadvertently changed, it is simple to restore.



Press + and - buttons simultaneously for five (5) seconds, or until the screen goes blank. When icons reappear, contractor default settings are restored.

## Restore Standard Setting



Press the — and left arrow buttons simultaneously for five (5) seconds, or until the screen goes blank, to cancel the Contractor default setting and restore the “Standard Setting”: temperature 37°F (3°C), rain fall ¼” (6mm) and “programmed irrigation” mode. When icons reappear, “Standard Setting” is active.

## 8 Select the Sensor Location

### The communication range for the WR2 Wireless Sensor is 700 feet (213.4 meters).

- A blinking light on the bottom of the Sensor indicates signal strength for 20 minutes immediately following successful pairing. The Sensor updates its signal strength every 3 seconds (i.e. 1 blink = reliable signal strength, series of 4 blinks = strongest signal strength). If the signal strength is not optimum in one location, try another location. Even as little as a few feet difference in placement can improve signal strength.

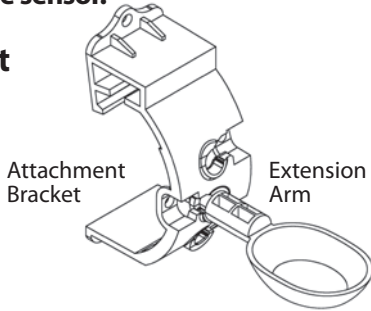
Signal	Sensor LED
<b>GOOD</b> Install	1-4 Blinks
<b>POOR</b> DO NOT install	Does not blink

- Select a mounting location where the rain-sensor will receive direct rainfall. Make sure the sensor extends beyond the roof line, tree limbs and any other obstructions. Install the Rain Sensor in an area that receives as much rain and sunlight as the landscape. Be sure to mount the sensor above spray from the sprinklers.

## 9 Sensor Mounting Instructions

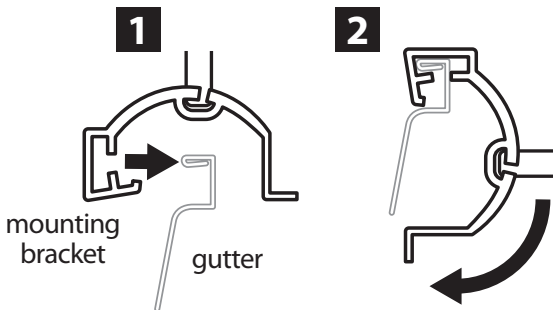
This section provides detailed instructions on how to install the sensor.

### Sensor Bracket Assembly Components:



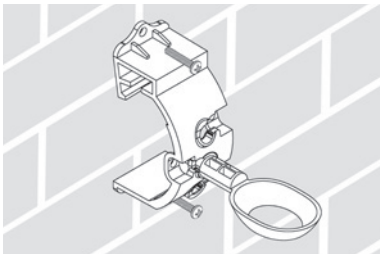
### Attaching the bracket to a gutter.

Slide the top portion of the attachment bracket over the lip of the gutter. Rotate the bracket downward over the gutter as shown in the following installation steps.



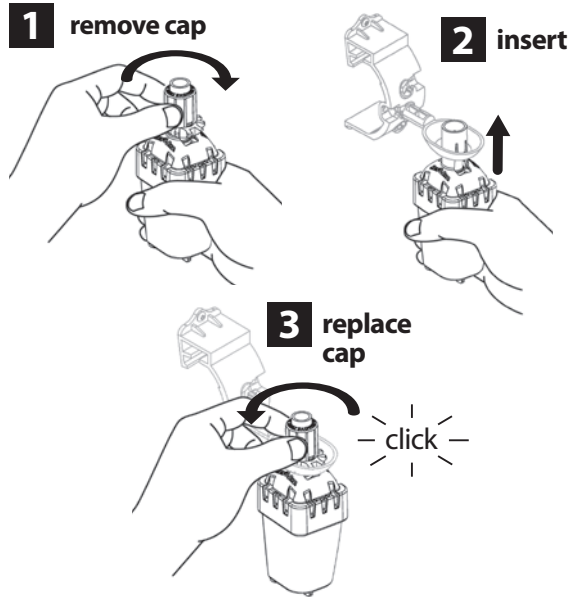
### Attaching the bracket to a Flat Surface.

Use the supplied hardware to mount the attachment bracket to a flat surface such as a wall or fence.



### Installing the Sensor in the attachment bracket.

To insert the Sensor in the attachment bracket you must first remove the Sensor cap. Hold the sensor body in one hand; gently twist the cap with your other hand. Slide the neck of the sensor up through the opening of the extension arm. Reinstall the cap. A clicking sound indicates that the two latches on the sensor body have fully re-engaged the cap.



## 10 Using Multiple Controller Interface Units

Up to four (4) Controller Interface units can be paired to one (1) sensor.

1. Ensure all Controller Interface Units are powered up.
2. Synchronize the Sensor to the first Controller Interface in accordance with Section 4.
3. As you approach the second Controller Interface, remove the battery cassette from the Sensor. Push both arrow buttons simultaneously on the second Controller Interface. Wait 5 seconds. Reinsert the battery into the



Sensor. The Controller Interface “Sensor Indicator / Pairing Status” icon stops flashing when the device is synchronized to the Sensor. Continue with programming the second Controller Interface.

- Repeat step 3 to pair additional Controller Interface units to the Sensor.
- When multiple Controller Interface units are paired to one sensor, rely on the LCD screen signal strength indications only.

## WR2 Wireless Sensor Alerts & Troubleshooting

The unique two-way communication technology of the Rain Bird Wireless Rain and Rain/Freeze Sensor provides continuous monitoring of the Sensor status and communicates the following Controller Interface alerts.

Alert	LCD Display	Description	Resolution
<b>Initial Power Up Failure</b>	LCD screen is blank	Initial Power up screen / icons do not appear indicating the Controller Interface is not receiving power.	Confirm correct wiring of the Controller Interface to the Irrigation Controller.
<b>No Sensor Paired</b>	“Sensor Indicator / Pairing Status” icon continues to flash	During Installation: The sensor does not pair and is not communicating with the Controller Interface.	<ol style="list-style-type: none"> <li>Pair the sensor (see Section <b>4</b>).</li> <li>If step 1 does not correct the situation, then check/replace the battery.</li> </ol>
<b>Sensor Pairing Broken</b>	“Sensor Indicator / Pairing Status” icon does not communicate battery life or signal strength	After the WR2 Wireless Sensor is in operation: A sensor that does not communicate battery life / signal strength to the Controller Interface is no longer paired.	<ol style="list-style-type: none"> <li>First check/replace the battery. If a new battery is installed, the sensor automatically reacquires the Controller Interface.</li> <li>If you replace a sensor that is paired to the Controller Interface, you will have to pair the new sensor to the Controller Interface.</li> </ol>
<b>Low Battery</b>	“Battery Life Remaining” icon has only one (1) bar illuminated	The Sensor has transmitted a signal that battery life is low.	<p>Replace the battery.</p> <ol style="list-style-type: none"> <li>Remove battery cassette from sensor.</li> <li>Remove battery from cassette.</li> <li>Insert new battery using label on battery cassette to properly orient battery.</li> <li>Insert battery cassette into sensor.</li> <li>Sensor LED blinks once to indicate the sensor is powered up.</li> </ol> <p>Under normal operation, battery should last for four (4) or more years.</p>

## Replacement or Spare Parts

- WR2 Battery - #651009S
- WR2 Disk Assembly - #637810S

# Declaration of Conformity

Application of Council Directives: 2004/10S/EC  
1999/5/EC

Standards To Which Conformity Is Declared: EN55014-1:2006  
EN55022:2006  
EN55014-2: 1997 +A1:2001  
EN61000-4-2  
EN61000-4-3  
EN61000-4-8  
EN 300 220-2 V2.1.2

Manufacturer's Name: Rain Bird Corp.

Manufacturer's Address: 9491 Ridgehaven Court  
San Diego, CA 92123  
619-674-4068

Equipment Description: Irrigation Controller

Equipment Class: Class B

Model Numbers: WRS

I the undersigned, hereby declare that the equipment specified above, conforms to the above Directive(s) and Standard(s).

---

Place: San Diego, Ca.

---

Signature:



---

Full Name: Ryan Walker

---

Position: Controls Manuf. Division Director



[www.rainbird.com/WR2](http://www.rainbird.com/WR2)

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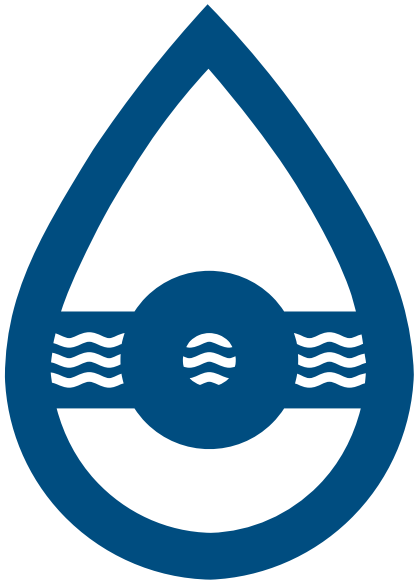
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# Section 1.3 Solenoid Valves

# Irrigation

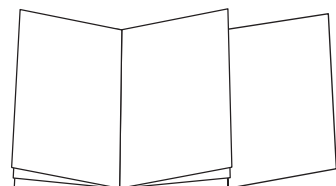
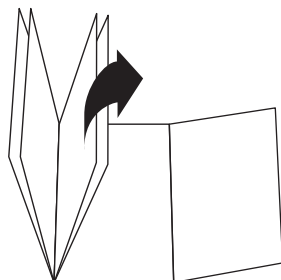
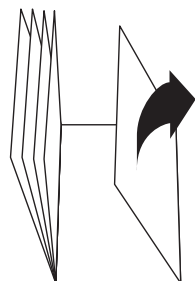


IRRIGATION



## DV & DVF VALVES

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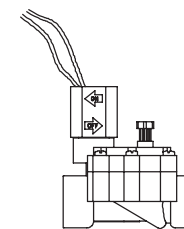
**Rain Bird Mexico S. de R. L de C.V**  
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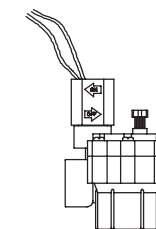
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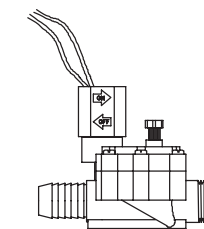
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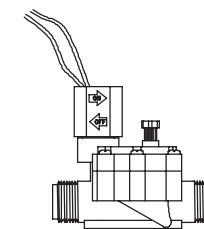
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100-DV: 1" (26/34)  
100-DV-SS: 1" (26/34)



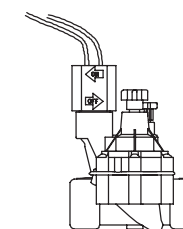
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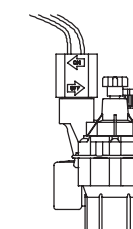
100-DV-MB: 1" (26/34)



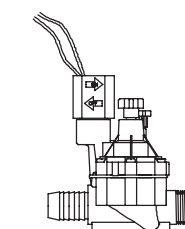
100-DV-MM: 1" (26/34)



100-DVF: 1" (26/34)  
100-DVF-SS: 1" (26/34)



100-DVF-A: 1" (26/34)



100-DVF-MB: 1" (26/34)

## Before Installation

1. Make sure you have sufficient water supply, pressure, and flow. Connect pipes to primary water source.
2. Install master valves, pressure regulators, and backflow preventers as needed. For system design information, refer

to the *Rain Bird Irrigation Design Guide*. Refer to local building codes for additional requirements.

## Connect Adapters to Valve

- 4 To make a watertight seal, wrap 1½ to 2 turns of Teflon tape around the threads on two male x slip adapters (A) or on the male threads of the valve (B; MM and MB models)
- 5 Screw the adapters into the valve water ports and hand tighten.

- 3 Flush the system thoroughly until the water from the submain runs clear.

- 6 Carefully tighten the adapters one to two additional turns past hand-tight.

**CAUTION:** Do not over-tighten the adapters. You may damage the valve or block the exit ports.

## Connect Valve to Pipes

- 7 Carefully apply a small amount of solvent cement to the inside of the adapter (A, threaded connector) or valve inlet port (B, slip connector). Apply a small amount of cement to the outside of the water supply pipe. Then attach the valve to the pipe. The valve solenoid **MUST** be on the downstream side (C). For DV-A and DVF-A models, connect the supply pipe to the bottom inlet (D).

**CAUTION:** Use only a small amount of solvent cement. Excess cement can damage the valve internally.

- 8 Cement the lateral pipe to the adapter (A, threaded connector) or valve outlet port (B, slip connector), as described in step 7.

- 9 To attach an MB model valve to low-density polyethylene pipe, cut the pipe square and clean. Slip one or two clamps over the poly pipe.

If necessary, carefully heat the poly pipe for easier installation. Slip the poly pipe completely over the barb (A). Then clamp (B) the pipe securely to the barb for a leak-proof seal.

## Connect Valve Wires

10. Select a wire gauge that meets electrical specifications. Multi-strand, direct-burial wire is recommended. Refer to local building codes for additional requirements.
- 11 Use a watertight connector to connect one lead on each valve to a common wire (A). Either lead may be used. All valves on the same controller can share the same common wire.

Use a watertight connector to connect the second lead on each valve to a power wire (B). Each power wire must be run separately to the controller.

- 12 Connect the shared common wire (A) to the common terminal on the controller. Connect one power wire from each valve (B) to a station terminal on the controller.

## Operate Valve Manually

- 13 To open the internal bleed, turn the solenoid handle (A) counterclockwise ¼ to ½ turn. Be sure to re-tighten the solenoid completely. Always use the solenoid handle, which is designed to shut the valve off completely and keep it from “weeping.”

To reduce flow (DVF models only), turn the flow control stem (B) clockwise. Use your fingers or a slot-head screwdriver. To increase flow, turn the stem counterclockwise.

To open the external bleed, turn the bleed screw (C) counterclockwise two turns. *Use the external bleed to flush the valve when you first start the system.* Turn the screw clockwise to close it.

## Operating Ranges

	075-DV	100-DV, 100-DVF, 100-DV-MM <sup>1</sup> , 100-DV-MB <sup>1</sup> , 100-DVF-MB <sup>1</sup> , 100-DV-A, 100-DVF-A, 100-DV-SS, 100-DVF-SS
Flow <sup>2</sup>	0.2 - 22 GPM (0,05 - 5,0 m <sup>3</sup> /h or 0,01 - 1,39 l/s)	0.2 - 40 GPM (0,05 - 9,08 m <sup>3</sup> /h or 0,01 - 2,52 l/s)
Pressure	15 - 150 psi (1 - 10 bar)	15 - 150 psi (1 - 10 bar)

<sup>1</sup> DV/DVF male x male (MM) and male x barb (MB) are not recommended for flows exceeding 30 GPM (6,8 m<sup>3</sup>/h or 1,9 l/s).

<sup>2</sup> For flows below 3 GPM (0,75 m<sup>3</sup>/h or 0,21 l/s), or any Landscape Drip application, use RBY-100-200MX filter installed upstream.

## Troubleshooting

Symptom	Solution
Valve won't shut off completely. Sprinklers “weep.”	Tighten the solenoid completely (¼ turn beyond hand tight). Use the solenoid handle, which is specifically designed to shut the valve off completely and keep it from “weeping.” Also tighten the bleed screw and bonnet screws.  Use the external bleed screw to flush the valve. If performance does not improve, turn off water. Unscrew bonnet screws and remove bonnet. Remove diaphragm and clean it in clear water. Reinstall diaphragm and bonnet. If necessary, replace the diaphragm with kit number 210746-03.
Valve won't open.	Check water source, controller power, and flow control to make sure they are open.  Turn off water. Unscrew bonnet screws and remove bonnet. Inspect body for debris. If filter is missing from diaphragm, replace diaphragm with kit number 210746-03.  Turn off water. Remove solenoid and replace with a known working solenoid. If the valve still won't open, replace the solenoid.
Valve slams on/off (water hammer).	Check system water pressure. If pressure is greater than 80 psi (5,5 bar), install a pressure regulator on the line before the valve to reduce water pressure.

**NOTE:** During winter shutdown, drain the system to protect DV valves from freezing. Failure to properly drain lines may damage the valves. Be sure to comply with all local guidelines.

