

#### **FREEZE SENSOR (VRRS-200 ONLY)**

The temperature at which the freeze sensor is activated is 37°F ±2° (3°C ±1°) and is not adjustable.

#### **BYPASSING THE SENSOR**

Should you desire to bypass the operation of the rain sensor for any reason (i.e., turn on your system even though the rain sensor has shut "off" due to rainfall), there is an easy way to do this. Simply go to the rain sensor and raise the rain quantity "cap" setting higher, or completely remove it altogether. This takes the pressure off the switch button, which allows the valve circuit to close again. Note: Using the "manual" switch on the controller will not bypass the sensor.

#### **MAINTENANCE**

There is no required maintenance for the unit. The rain sensor does not have to be removed or covered for winterizing purposes. All parts are easily replaceable if they become damaged or lost. The spindle assembly is designed to stay with the cap. Do not pull them apart. (See Figure 4)

#### **TROUBLESHOOTING**

Follow these simple checks before replacing your rain sensor:

##### **System will not come on at all:**

- Check to see that the rain sensor discs are dry and the switch "clicks" on and off freely by pressing the top of the spindle.
- Look for breaks in the wire leading to the rain sensor and check all wire junctions.
- If the rain sensor is dry and the wire leading to it is good, check the rain sensor switch by nicking the insulation of the two "outer" wires near the unit to expose copper. Turn one sprinkler zone on, and apply a "jumper wire" across the two exposed wires. If the sprinkler now comes on, the switch is bad. Wrap all nicked wires with electrical tape.
- The rain sensor is wired to function with most controllers. If you are unable to make the sensor work with the suggestions above you may have a unique controller. In this case you will need to cut the copper colored wire and attach it to the blue lead wire provided (VRRS-100 models only).

##### **System will not shut off even after heavy rainfall:**

- Check wiring for correct installation. (See "Operation Check to Verify Correct Wiring".)
- Check sensitivity setting on rain sensor, and move the cap to a more sensitive setting. The rain sensor is an accurate rain gauge and can be verified by setting up a "tube" type rain gauge in the same vicinity and making periodic readings.
- Check for obstructions to rainfall such as overhangs, trees or walls.

#### **WARRANTY**

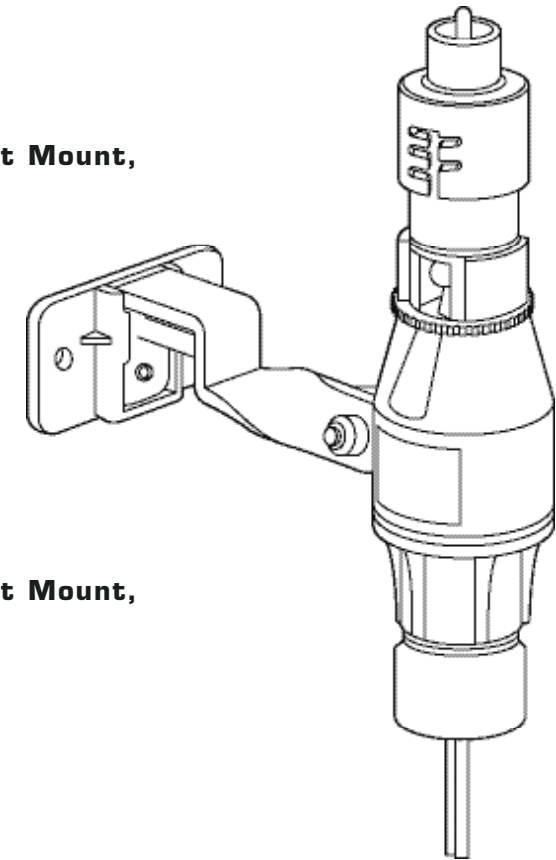
Virtualrain, Inc. warrants that its products will be free from materials and workmanship defects for the period stated by the distributor. With proof of purchase provided, Virtualrain, Inc. will replace, free of charge, the defective part or parts found to be defective under normal use and service for the period stated by the distributor. Prior to replacement, Virtualrain, Inc. reserves the right to inspect and authorize the defective part or parts; all defectives must be authorized in writing by Virtualrain, Inc. Liability under this warranty is limited solely to the replacement or repair of defective parts. This warranty is given expressly and in place of all other expressed or implied warranties including but not limited to warranties regarding fitness for use or merchantability. No agent or representative has authority to waive or alter this warranty.

Virtualrain® Inc.  
Pleasanton, CA. 94566

# RAIN SENSORS INSTALLATION MANUAL

## **VRRS-100**

**Gutter, Wall, Conduit Mount,  
Rain Sensor**



## **VRRS-200**

**Gutter, Wall, Conduit Mount,  
Rain/Freeze Sensor**

#### **INTRODUCTION**

Thank you for selecting a Virtualrain® Rain Sensor (VRRS). This sensor will provide conservation, convenience, and flexibility to your fully automatic watering system. Never again will you see your sprinklers running on a rainy day. Now, after a set amount of rain has fallen (and/or freezing temperatures for the VRRS-200), the sensor engages a switch that will prevent the controller from watering. The added freeze sensor (with VRRS-200) will provide peace of mind (when temperatures drop below 37°F [3°C]) by interrupting your sprinklers and reduce the hazards of standing water freezing on your driveway, sidewalks, and patios. Once the rain sensor has dried sufficiently, the sensor allows normal sprinkler operation.

## INSTALLATION INSTRUCTIONS

### Mounting

The VRRS-100/200 sensor includes 3 mounting options.

1. 1/2" Slip Adapter
2. 1/2" Threaded Adapter
3. Rain Gutter or flat surface adapter

Mount the rain sensor where it will be exposed to direct, unobstructed rainfall (but away from sprinkler spray). The switch-housing portion must be upright (see Figure 1).

### Hints for mounting:

- A. Mount as close as possible to the timer. This will cause the wire run to be shorter, which minimizes the possibility of wire breaks.
- B. Mount in the highest possible position where rain can fall directly upon the rain sensor.
- C. As described in the "Operation" section of this manual, "reset rate" refers to the amount of time it takes the rain sensor to dry out sufficiently for the sprinkler system to be allowed to come back on. The mounting location will affect this rate and should be taken into consideration should extreme conditions exist. For example, mounting the rain sensor on a very sunny, south-eastern end of a building may cause the rain sensor to dry out sooner than desired. Similarly, mounting on the northern end of a building with constant shade may keep the rain sensor from drying soon enough. Some experimentation and use of the "vent ring" (as described later) will usually yield satisfactory results.

Once the rain sensor is mounted, run the wire to the controller, using wire clips every few feet to fasten it. If an extension to the wire provided is needed, use the following table to determine the minimum wire gauge needed:

<b>Extension needed:</b>	<b>25-50 ft.</b>	<b>50-100 ft.</b>	<b>100 ft. or more</b>
<b>then use:</b>	<b>20 AWG</b>	<b>18 AWG</b>	<b>16 AWG</b>

### Wiring

Important: The rain sensor is sold and designed for 24-Volt irrigation controllers only. All wiring must conform to applicable local codes.

The two most common wiring situations are detailed below. For non-standard wiring situations, please consult your distributor.

A. 24-Volt Solenoid Valves Only (No booster pump) (See Figure 2) With the two wires from the rain sensor at the controller, locate the "common ground" wire of the solenoid valves. If it is connected to the common terminal on the controller disconnect it. Attach one wire of the rain sensor to the "common" terminal (usually marked "COM") on the controller. Attach the other wire of the rain sensor to the common wire leading to the valves. Note: The common wire to the valves does not have to be interrupted at the controller. The Rain sensor may be wired anywhere along the common wire line.

B. 24-Volt Solenoid Valves with Booster Pump (See Figure 3) Locate the common wire to the solenoid valves and the common wire lead to the coil of the relay that starts the pump. If these two wires are connected to the "common" terminal on the controller, disconnect both of them.

Twist these two wires together along with one wire from the rain sensor and secure with a wire nut. Attach the other wire of the rain sensor to the "common" terminal on the controller. **Note:**

**The pump circuit output must be 24 volts in this situation if different do not proceed.**

### CHECK TO VERIFY CORRECT WIRING

Turn on one zone of the sprinkler system that is visible while you are in reach of the rain sensor. Manually depress the spindle at the top of the rain sensor until you hear the switch "click" off. The sprinkler zone should stop instantly. If it does not, check wiring for correct installation.

FIGURE 1: Mounting Rain Sensor

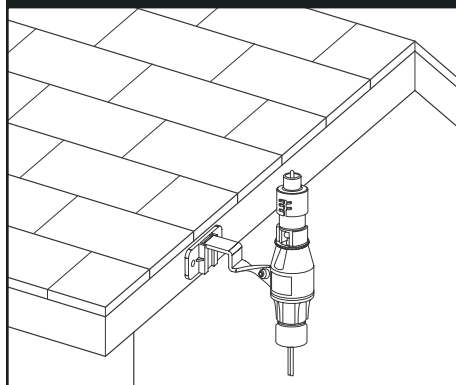


FIGURE 2: Wiring

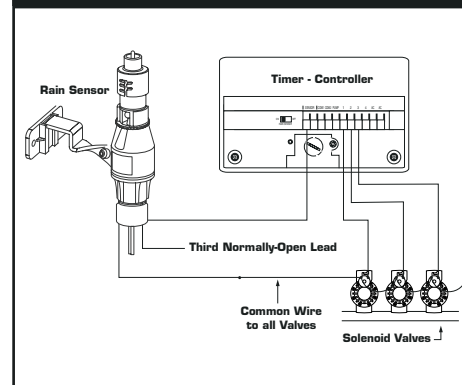
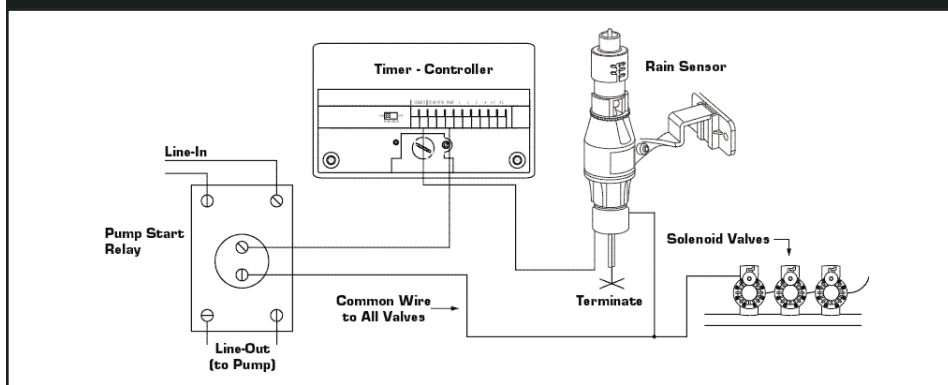


FIGURE 3: Wiring



### ADJUSTMENTS AND OPERATION

The rain sensor can keep the irrigation system from starting or continuing after rainfall quantities of 1/8", 1/4", 1/2", 3/4", or 1". To adjust it to the desired quantity of rainfall, rotate the cap on the switch housing so that the pins are located in the proper slots (See Figure 4). Do not forcibly twist the cap as this might break the pins. The time that it takes the rain sensor to reset for normal sprinkler operation after the rain has stopped is determined by weather conditions (wind, sunlight, humidity, etc.). These conditions will determine how fast the hygroscopic discs dry out, and since the landscape is also experiencing the same conditions, their respective drying rates will roughly parallel each other.

There is an adjustment capability on the rain sensor that will slow down the reset rate. By turning the "vent ring" (See Figure ←) to completely or partially cover the ventilation holes, the hygroscopic discs will dry more slowly. This adjustment can compensate for an "overly sunny" installation location or peculiar soil conditions. Experimenting with the vent rings will best determine the ideal vent setting.

FIGURE 4: Parts Diagram

