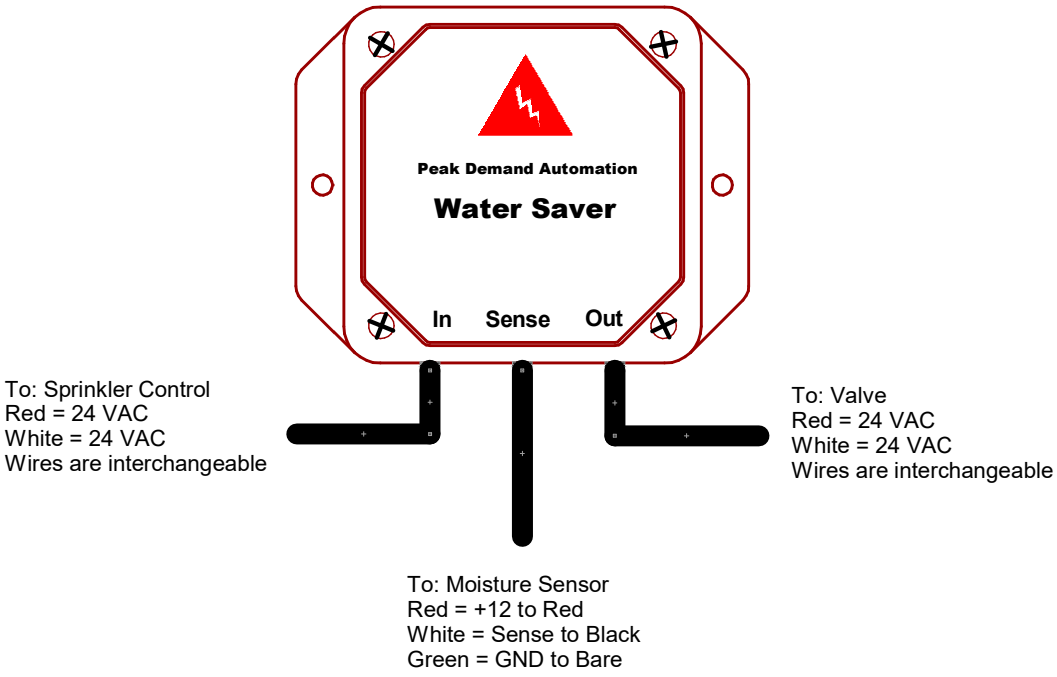
Peak Demand Automation

Water Saver



The PDA Water Saver senses moisture in the soil using an external moisture sensor. The moisture may be due to previous watering or recent rainfall. In either case it saves water and energy by not letting the sprinkler valve(s) actuate. It draws power from the sprinkler lines, so no external power is required. The computer inside senses fault conditions and compensates automatically. Shutoff and/or fault conditions are detected and acted on within one second of sprinkler activation.

The Water Saver cuts off the sprinkler whenever the Volumetric Water Content (VWC) goes above 15%. This will not inhibit the sprinklers under normal circumstances, but can automatically shut off the water for several days after a rain. The Water Saver automatically senses if the sensor is damaged, missing or short circuited: watering occurs and the shutoff function is disabled. If the on-board computer determines it is appropriate to turn off the water, it will remain shut off for the duration of watering cycle, regardless of its length.

Installation of moisture sensor

The Water Saver uses the VH-400 Soil Moisture Probe from Vegetronix Labs of Riverton, Utah. The sensor is constructed of a narrow fiberglass probe with its electronics encapsulated in a waterproof housing:

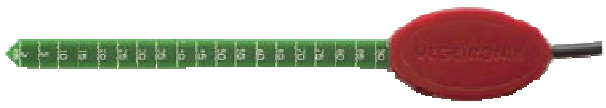


Figure 2. Vegetronix VH-400 Soil Moisture Probe

Figure 2 shows the Vegetronix probe. Unlike low cost metal moisture probes, the Vegetronix probe works via soil capacitance. The advantage of this type of probe is that there is no metal in contact with the soil to corrode. The probe will last for many years in place without recalibration. The disadvantage is that the 3.5 inch fiberglass section is fragile. Always use gardening tools when placing the sensor to avoid breaking the green fiberglass section. Carefully replace the soil surrounding the probe and compact it to be similar to other locations to be watered. Avoid placing the probe in an area too moist or too dry. The probe can be moved anytime. The probe comes with a wire approximately six feet in length, but can be extended to 200 feet without affecting its accuracy. Place the probe in a vertical orientation to average the soil moisture at various depths. Try to place the probe in a location that will not be disturbed by foot traffic, as this could damage the probe. If the probe becomes damaged or broken, it should be replaced. The Water Saver does not have to be recalibrated.

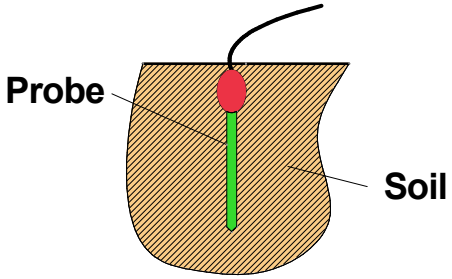


Figure 3. The probe installed in soil

Figure 3. shows the probe buried in soil with the electronics module toward the top. The accuracy of the probe is not affected by its orientation. The soil moisture is sensed, averaged, over the length of the green fiberglass section. The probe can be buried to sense the soil moisture for the types of plants to be watered, shallow for grasses, deeper for bushes and shrubs and deeper for trees. Because the orientation of the probe does not affect its accuracy, positioning it to completely bury the cable will help to protect the wire to the sensor.

Basic Installation: Water Saver with a single moisture sensor and single valve

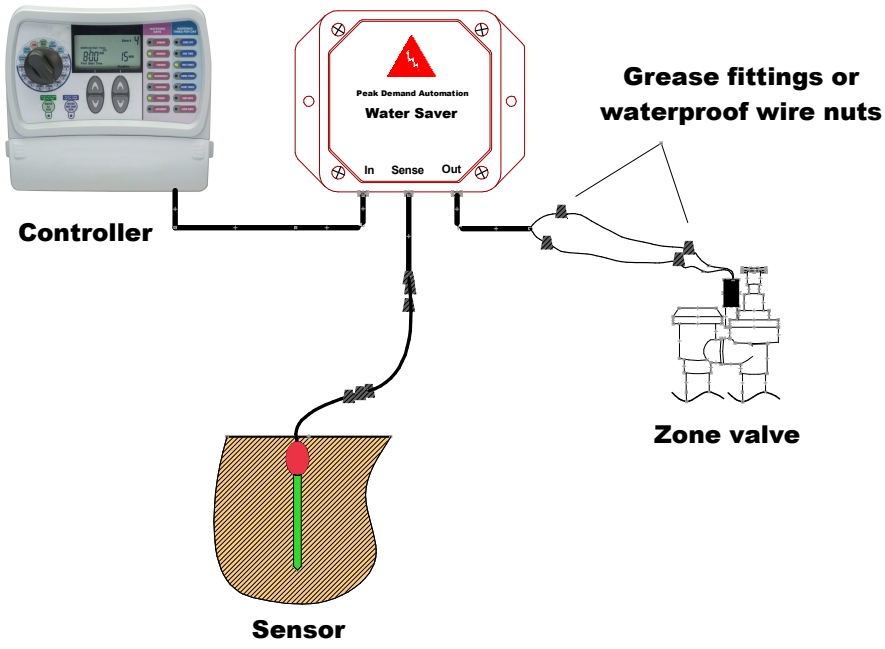
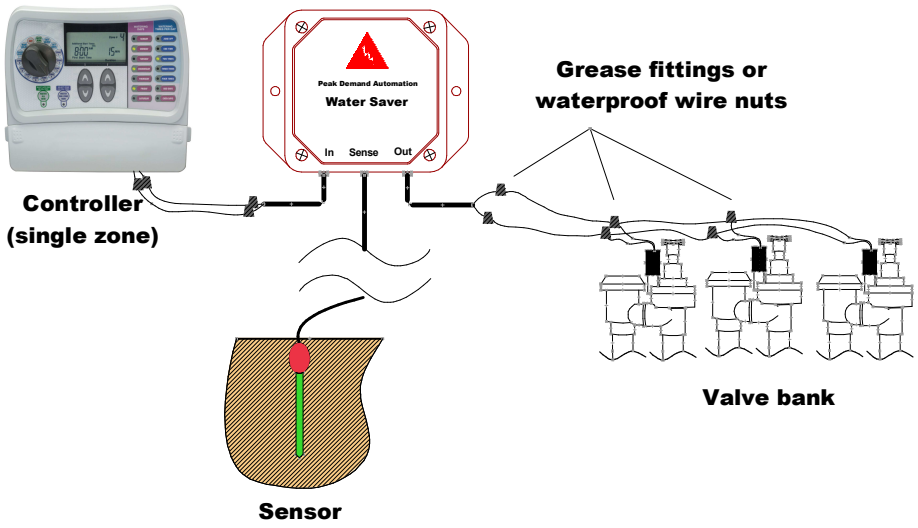


Figure 4. Basic Water Saver installation.

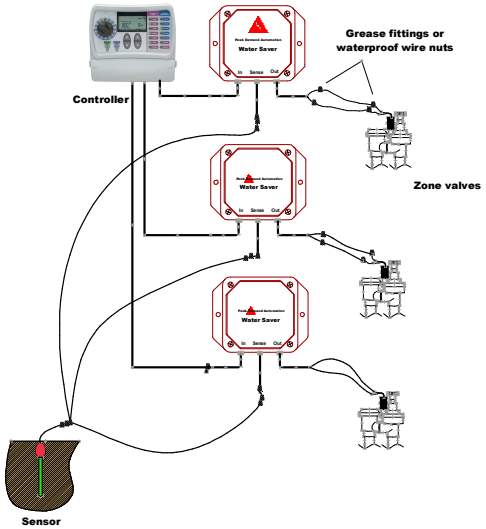
Figure 4. shows the basic installation of the Water Saver. The figure shows the Water Saver controlling one zone of the sprinkler controller with one moisture sensor. When connecting wires outdoors, it is recommended to use waterproof wire nuts or grease nuts. The water Saver itself is NOT waterproof, and should be mounted proximate to the controller, or in an outdoor location which is not subject to direct contact with water. The Water Saver has been designed to handle long cable lengths from it to the sprinklers or the moisture sensor. Self tapping screws (included) provide a means for mounting the unit directly on a wall. Always bury the wires going to any sprinkler device to help protect them from digging. Should the wires inadvertently be severed, the Water Saver sprinkler suppression feature will be lost.

Driving Multiple Valves with a single Water Saver.

A single Water saver can drive up to five valves or a total of two (2) amps. Make sure the transformer supplying the valves has enough capacity to drive all the valves.



Up to ten (10) Water Savers can use a single moisture sensor. If multiple sensors are used, overwatering is not detected, but rainfall can be if the sensor is place in a location where it is responsive to rain.



Technical Specifications

Specifications, Water Saver	
Power Input	Nominal: 24 VAC 10-50 VDC 20-36 VAC
Sprinkler cutoff level	15% Volumetric Water Content (VWC)
Current, sprinkler on, with sensor	30 mA
Current, sprinkler off, with sensor	47 mA
Current, sprinkler on, no sensor	20 mA
Current, sprinkler off, no sensor	37 mA
Maximum sprinkler current	2 Amps
Reversing polarity on input will not damage device	

Warranties

All Peak Demand Automation ("PDA") products are covered under a limited warranty against defects in workmanship and materials for a period of two years. PDA will repair or replace any product found to be defective in the warranty period. Of course the customer is responsible to ensure that the PDA products are suitable for the installation and compatible with products from other manufacturers which may be used in conjunction with the PDA products. PDA will not be responsible to incidental or consequential damages arising from any defects in its products. For the full text of the warranty and complete terms please visit: http://www.peakdemandautomation.com/product-warranties.html.