

## Frequently Asked Questions

### How does the SMRT-Y work?

The SMRT-Y sensor accurately measures the moisture level in the soil. When the soil is dry, the SMRT-Y allows the irrigation controller to water as scheduled. When the soil moisture level is sufficiently high, the SMRT-Y will disable all zones from irrigating. The SMRT-Y acts as a switch, opening and closing the zone common wire depending on the soil moisture level. When the zone common wire is open, the irrigation system valves will not operate. The moisture threshold – that level of moisture where the SMRT-Y switches on or off – is set by the user and can be adjusted up or down as needed.

### What is the ideal moisture threshold and how do I set it?

The SMRT-Y has a default moisture threshold of 25%, however, this value may or may not be ideal for your landscape. The SMRT-Y includes an auto-set feature which determines the ideal threshold for your soil. Please see the user manual for details regarding how to use this feature. Once set, the moisture threshold can always be changed by using the buttons on the front of the SMRT-Y user interface. Consider using the auto-set feature to establish a threshold. If your landscape looks healthy over time, consider decreasing your threshold 0.5% - 1% at a time to save even more water. Keep an eye on your landscape to assure adequate health. If you observe some zones with stressed plants, increase your threshold by 1%. This method allows you to maximize your water savings while appropriately managing plant health.

The following table includes average values for field capacity and moisture thresholds by soil type.

Soil Type	Typical Field Capacity	Suggested Moisture Threshold
Sand	15%	12%
Loamy Sand	18%	14%
Sandy Loam	21%	17%
Sandy Clay Loam	29%	23%
Loam	31%	25%
Sandy Clay	33%	26%
Silt Loam	35%	28%
Clay Loam	36%	29%
Silt	38%	30%
Silty Clay	40%	32%
Silty Clay Loam	40%	32%
Clay	44%	35%

### Can I use more than one SMRT-Y per controller?

Yes. However, separate power supplies are required for each SMRT-Y unit. In addition, each subset of valves controlled by a sensor must be served by an isolated common. Please contact your sales representative for detailed instructions.

### Why does the SMRT-Y LCD display 0% moisture level; 32 deg F (or 0 deg C) Temperature; and 0.0 dS/m Soil EC?

The SMRT-Y controller interface is not communicating with the sensor. Check all wiring connections. Assure that wiring connections match those detailed in the SMRT-Y quick start guide. Confirm that all underground splices are properly performed and protected with direct bury connections. Confirm that a

rain sensor (or other common interrupting sensor) is not interfering with the common connection between the white wire on the SMRT-Y Controller Interface Unit and the filed common(s).

### **Why is the SMRT-Y LCD display blank (not functioning)?**

Check all wiring connections. Assure that wiring connections match those detailed in the SMRT-Y quick start guide. Confirm that the orange wire from the SMRT-Y controller interface unit is connected to a 24VAC terminal on the controller and the Black wire is connected to the controller's common terminal. Use a volt meter to confirm that 24VAC is present across these two connections. Some controllers include two terminals for the 24VAC connection plus a separate Common terminal. Leave the black wire on the controller's COM (common) terminal while moving the orange wire from one to the other 24VAC terminals. Connect the orange wire to that 24VAC terminal which activates the LCD display. Another explanation for a blank SMRT-Y screen is the presence of another sensor like a Rain Sensor. If a Rain Sensor common interrupting device is actively disabling the irrigation controller, then the SMRT-Y may also lose power. Once the other sensor is de-activated (allows irrigation), the SMRT-Y should return to operation. The SMRT-Y has non-volatile memory. The moisture threshold will be retained.

### **Why are zones watering when the SMRT-Y is in the Watering Suspended mode (moisture level in the soil is above the set moisture threshold)?**

All field common wires must be removed from the irrigation controller's common terminal and then connected to the white wire on the SMRT-Y controller interface unit. Only the black wire from the SMRT-Y controller interface unit should be connected to the irrigation controller's COM (common) terminal. Additionally, up to two zones may be isolated from the SMRT-Y by connecting either one of the brown or blue wires from the SMRT-Y controller interface unit to the irrigation controller's zone terminals. If one or both of these optional bypass wires are connected to zone terminals, those zones will water when the SMRT-Y is in "Watering Suspended" mode.

### **Why are some zones watering erratically even when there is no scheduled watering by the irrigation controller?**

Brief and erratic zone activation will occur if zone/field wires are connected to the same terminal as the green wire from the SMRT-Y controller interface unit. The SMRT-Y sensor can be connected to any zone wire. Once the target zone wire is identified, that zone wire must be removed from the irrigation controller's zone terminal and connected to the red wire on the SMRT-Y controller interface unit. The green wire from the SMRT-Y controller interface unit must be connected to the zone terminal on the irrigation controller. **ONLY THE SMRT-Y GREEN WIRE CAN BE CONNECTED TO THE TARGET SENSOR ZONE TERMINAL.** Consult the SMRT-Y Quick Reference Guide for more detail and a wiring diagram.

### **How can one sensor dictate the watering needs for an entire property?**

By locating the sensor in the driest or worst case zone and correctly programming your irrigation controller to accommodate the zone specific characteristics (plant type, sun versus shade, etc.), the SMRT-Y's single sensor will adequately manage irrigation. One or two zones can be isolated from the influence of the SMRT-Y by using the optional bypass wires attached to the SMRT-Y controller interface unit. Consult the SMRT-Y Quick Reference Guide for more details regarding the use of the optional bypass wires.

### **How much water can the SMRT-Y save?**

Water savings of 40% or more are typical. A study by the University of Florida resulted in savings of 73%. In addition to saving water, the SMRT-Y can prevent over watering which can cause fungus and root damage due to rotting.

### **Can I install my SMRT-Y outdoors?**

Yes. The SMRT-Y user interface unit has been designed for outdoor installations when the supplied sun cover is used. The Sun Cover must be installed to protect the LCD display from UV radiation.

**Can I isolate zones from the influence of the SMRT-Y sensor?**

Answer. Yes. One or two zones can be isolated from the influence of the SMRT-Y by using the optional bypass wires attached to the SMRT-Y controller interface unit. Consult the SMRT-Y Quick Reference Guide for more details regarding the use of the optional bypass wires.

**Can I use the SMRT-Y to control a subset of my zones.**

Yes. If feasible, a separate common wire can be used to supply power to only those zones targeted for control by the SMRT-Y sensor. Using this technique, the SMRT-Y sensor can be used to control from one to any subset of the irrigation controller's zones. If only one or two zones are to be isolated from the influence of the SMRT-Y sensor, the optional by-pass wires may be used. Consult the SMRT-Y Quick Reference Guide for more details regarding the use of the optional bypass wires.

**Can the SMRT-Y be used on battery operated controllers?**

No. The SMRT-Y needs a 24VAC power supply to operate.

**Is the SMRT-Y only compatible with Rain Bird irrigation controllers?**

No. The SMRT-Y will work on any manufacturer's zone wired controller. The SMRT-Y is not compatible with 2-wire system.

**Is the SMRT-Y compatible with 2-wire systems?**

No. The SMRT-Y will, however, work on any manufacturer's conventionally wired controller.

**Does the SMRT-Y sensor need calibration during installation or if I move the sensor to a different location?**

No. The SMRT-Y sensor is factory calibrated and never needs re-calibration. The SMRT-Y is designed to be very accurate with changing conditions including soil type; soil temperature; and soil salinity.

**How deep should I bury the sensor?**

The sensor should be buried to a level which is just below the root zone. For turf, the sensor is usually buried to a depth of 3-5 inches.

**Why does the SMRT-Y sometimes display "Allowed Watering" when the moisture level is above the set moisture threshold?**

This can occur if the irrigation controller is watering a zone when an elevated moisture level is measured by the sensor. The SMRT-Y has internal circuitry which prevents the SMRT-Y from shutting off the irrigation controller during the middle of its programmed irrigation cycle. This feature assures that all zones are watered in each scheduled irrigation program. This disabled state persists for 30 minutes after the last zone is watered. Once irrigation controller has been at rest for more than 30 minutes, the SMRT-Y will transition to "Watering Suspended" if the moisture level is above the set threshold. The 30 minute time can be reset to zero by disconnecting and re-connecting power to the SMRT-Y.

**Do I need to re-enter the moisture threshold after a power outage?**

No. The SMRT-Y has non-volatile memory. The moisture level and the watering history are maintained in memory and re-displayed when power is restored to the SMRT-Y.

### **Does the SMRT-Y change the irrigation controller's program?**

No. The SMRT-Y is simply a switch turning on and off the irrigation controllers common wire depending on the moisture level measured by the sensor. The irrigation controller must be programmed separately.

### **My irrigation controller does not have an available 24VAC terminal. Can I still use the SMRT-Y on my controller?**

Yes. If you can't access the irrigation controller's 24VAC source, an auxiliary power supply can be used to power the SMRT-Y. Inexpensive auxiliary 24VAC (650mA or greater) power supplies should be available from your local irrigation distributor. Connect one of the auxiliary 24VAC power supply wires to the orange wire on the SMRT-Y and secure with a wire nut. Connect the other auxiliary 24VAC power supply wire to the COM (common) terminal on the irrigation controller. All other SMRT-Y connections should follow the instructions provided in your SMRT-Y quick start guide. Once these connections are completed, test the "sensor" zone on your irrigation controller. The sensor zone is the zone wire on which the sensor is connected. This is the zone where the green wire from the SMRT-Y controller interface unit is attached. If the sensor zone does not activate (the sensor zone valve does not open and your sprinklers in that zone do not operate) then reverse (swap) the connections made with the two wires from the auxiliary 24VAC power supply. Perform a test once again to assure that your irrigation controller activates the sensor zone as expected.

### **What is the purpose of the metal rods on the SMRT-Y sensor?**

The stainless steel rods on the SMRT-Y sensor act as wave guides and not electrodes. Our sensor uses a technique called Time Domain Transmissometry (TDT) to measure soil moisture content. The rods allow an electromagnetic pulse to travel along their surface. As the moisture content increases, the speed of the pulse is slowed. The speed of the electromagnetic pulse is inversely proportional to the moisture level of the soil near the rods. Our patented sensor uses an additional feature called digital signal processing (DSP) to more accurately measure this pulse delay.

### **Will the metal rods eventually corrode?**

The stainless steel alloy used for the rods on the SMRT-Y sensor was chosen because of its ability to resist corrosion in environments characterized by high salinity. In addition, we have isolated the SMRT-Y rods from the electronics inside the body of the sensor to avoid galvanic reaction. The SMRT-Y sensor also includes electrical surge protection within the sensor to protect against lightning strikes. Sensors installed in 2002 (the earliest installations) continue to show no signs of corrosion. In addition, Rain Bird has performed accelerated life tests using high salinity and temperature levels to simulate many years of use. Sensors continue to pass these accelerated life tests. We feel confident that the SMRT-Y sensor will perform accurately and without corrosion decades after installation.

### **How far can the sensor be located from the valve box?**

The maximum distance between the sensor and controller or valve box is actually dictated by the valve and not the sensor. The valve requires a minimum amount of current to operate. The available current is reduced as the length of wire increases. When a SMRT-Y sensor is connected to a zone wire (connected to the nearest valve), the length of wire starts at the controller, passes through the valve box to the sensor and back to the controller via the common wire. The table below provides maximum wire length for this entire path (round-trip). If you assume that the wire length from the controller to the sensor is half the round-trip distance (usually a safe assumption) then your answer to this question is one half of those lengths shown in the table below. Most irrigation controllers operate one valve at a time. Therefore, the first column is most often used. Assuming the site is wired with 18 gauge wire (another safe assumption) and one active valve, the maximum wire length is 1,563 feet. The associated maximum distance from the controller to the sensor is  $1,563/2 = 781$  feet. As the table demonstrates, this distance can be extended to 2,000 feet by using lower

gauge wire.

## Maximum Wire Length - Round-trip from Controller to Sensor (feet)

Wire Size	Number of Valves Active at the Same Time (250mA Each)				
	1	2	3	4	5
10 Gauge	4,000	4,000	3,333	2,500	2,000
12 Gauge	4,000	3,125	2,083	1,563	1,250
14 Gauge	3,922	1,961	1,307	980	784
16 Gauge	2,469	1,235	823	617	494
18 Gauge	1,563	781	521	391	313

### What is Soil EC?

Soil EC = Soil Electrical Conductivity. In addition to moisture content and soil temperature, the SMRT-Y also measures and reports soil electrical conductivity (the ability of the soil to conduct electrical current). As dissolved salts (ions) accumulate in soil, the Soil EC value will increase. Some sources of reclaimed water have a high salt content. Over time, these salts can accumulate in the soil. Heavy rain or irrigating with higher quality (low salt content) water will leach out the accumulated salts from your soil. In general, high Soil EC values will negatively impact plant health.

The SMRT-Y measures Soil EC using the industry standard unit of dS/m (deci-Siemens per meter). The SMRT-Y reports the “Bulk” Soil EC value versus the “Saturated Paste Extraction” method. The bulk method measures the conductivity of the water when it is mixed with soil. The saturated paste extraction method extracts the water from the soil before measuring the conductivity. Saturated past extraction values are usually 3-10 times higher than the equivalent measurements using the bulk format. The presence of soil during a soil EC measurement will decrease the reported conductivity. Bulk EC values are soil dependent.

### Will the SMRT-Y suspend irrigation based on soil temperature?

No. Although the SMRT-Y measures and displays soil temperature, it will NOT interrupt irrigation based on this reading. Consider using the Rain Bird WR2 Wireless Rain/Freeze sensor to suspend irrigation during freezing temperatures. These two products are compatible.

### Can I use a rain sensor with the SMRT-Y? How should I connect a rain sensor to a controller equipped with a SMRT-Y?

Yes. In fact, we recommend it. Connect the SMRT-Y as described in the user manual. If available, use the sensor port on the controller for the rain sensor. If the irrigation controller does not have a sensor port, connect the rain sensor in series with the SMRT-Y at the common terminal. In other words, remove the SMRT-Y black wire from the common terminal. Then connect one of the two switched wires from the rain sensor to the controller’s common terminal. Finally, connect the SMRT-Y black wire to the other switched wire from the rain sensor. When the rain sensor is wet and switches to the off position, the SMRT-Y may lose power (the LCD screen is blank). Once the rain sensor is dry, the SMRT-Y will once again power up. The SMRT-Y has non-volatile memory so all of your settings will be retained. The SMRT-Y will perform an automatic moisture reading upon power up.

### Will the SMRT-Y work with my central control system?

The SMRT-Y will work with any standard, direct wired controller including satellite controllers in a central control system. The SMRT-Y will not work with 2-wire/decoder based controllers. In a central control system, the SMRT-Y will open the common when the moisture is above the set threshold and disable any device which uses that common. Some satellite controllers will send feedback to central control alerting that irrigation did not occur. The SMRT-Y can not send data or commands to central control so these “moisture driven suspended irrigation events” will not necessarily be identified as such. Some central control systems can define an open common at a satellite as an moisture driven event. When using the SMRT-Y on any controller, assure that pumps are also disabled when the SMRT-Y has opened the common.

**Can I connect the SMRT-Y to my controller’s sensor port?**

No. The SMRT-Y controller interface unit does not include a switched circuit suitable for a sensor port.