

WATERMARK Soil Moisture Sensor



In use since 1978, the patented Watermark sensor is a solid state electrical resistance-sensing device that is used to measure soil water tension. As the tension changes with water content the resistance changes as well. That resistance can be measured using the Watermark Sensor.

The sensor consists of a pair of highly corrosion resistant electrodes that are imbedded within a granular matrix. A current is applied to the Watermark to obtain a resistance value. The Watermark Meter or Monitor correlates the resistance to centibars (kilopascals) of soil water tension.

The Watermark is designed to be a permanent sensor, placed in the soil to be monitored and "read" as often as necessary with a portable or stationary device. Internally installed gypsum provides some buffering for the effect of salinity levels normally found in irrigated agricultural crops and landscapes.

US Patent
No. 5,179,347

Specifications –

MATERIALS: ABS plastic caps with stainless steel body over a hydrophilic fabric covered granular matrix.

DIMENSIONS – DIAMETER: .875 in. (22 mm)
LENGTH: 3 in. (76 mm)

WIRE LEADS: AWG 20, 2 leads

ORDERING INFORMATION: Catalog #200SS –
WATERMARK Soil Moisture Sensor: 5 ft. and 10 ft.
length sensors come in a clear plastic display
package. Standard lengths: -5 = 5 ft. (1.5 m),
-10 = 10 ft. (3 m), -15 = 15 ft. (4.5 m)
-OR- _ _ _ _ = custom length.
Other lengths are bulk packaged.
WARRANTY: One year

OPERATING PRINCIPLE:

The WATERMARK sensor is a resistive device that responds to changes in soil moisture. Once planted in the soil, it exchanges water with the surrounding soil thus staying in equilibrium with it. As the soil dries, water is removed from the sensor and the resistance measurement increases. Since soil water is an electrical conductor, the resistance lowers when the soil is rewetted providing a relative indication of the soil water status. The WATERMARK is unique in that it takes its resistive measurement within a defined and consistent internal matrix material, rather than using the surrounding soil as the measurement medium. This unique feature allows the WATERMARK to have a stable consistent calibration that does not need to be established for every installation. The ohm of resistance to centibars (kPa) of soil water tension relationship is constant and built into the reading devices that are used to interrogate the sensor. The WATERMARK is calibrated to report soil

Features:

- Proven stable calibration
- Range of measurement from 0 to 200 centibars (kilopascals) (0 to 2 bar)
- Fully solid state
- Will not dissolve in soil
- Not affected by freezing temperatures
- Internally compensated for commonly found salinity levels
- Inexpensive, easy to install and use
- Compatible with AC or DC reading devices (specialized circuit required)
- NO maintenance required

APPLICATIONS INCLUDE –

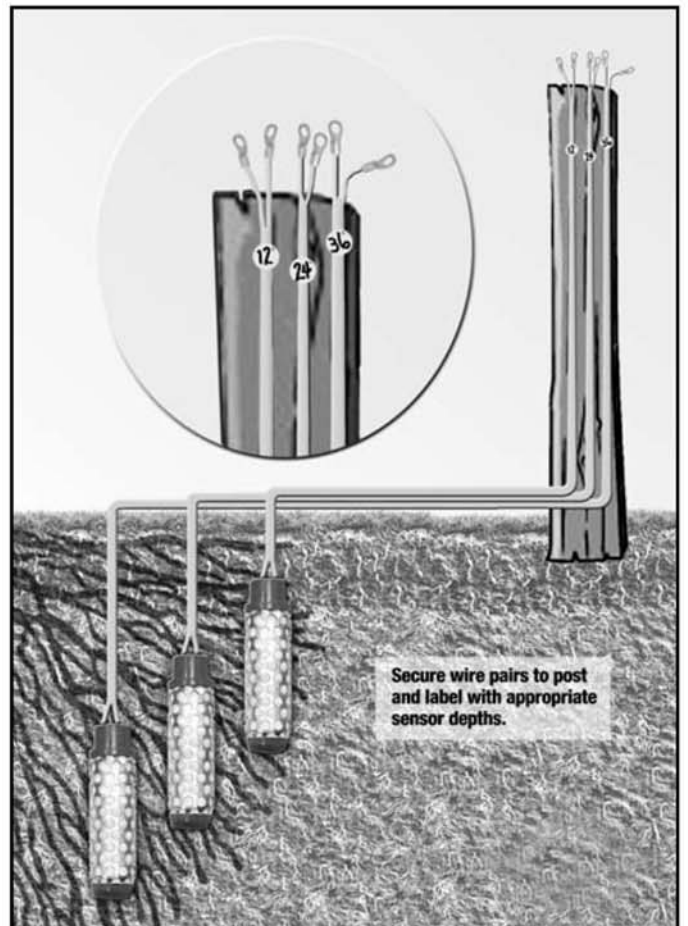
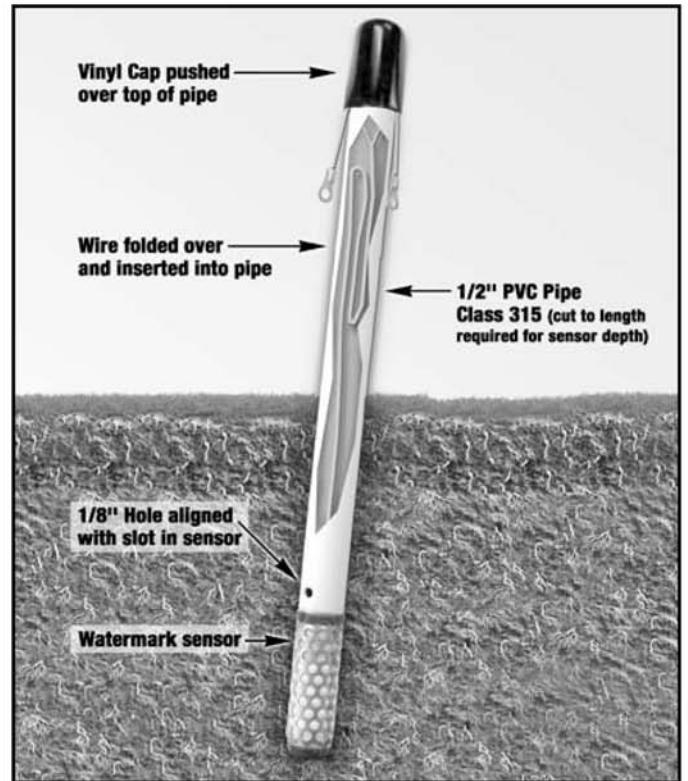
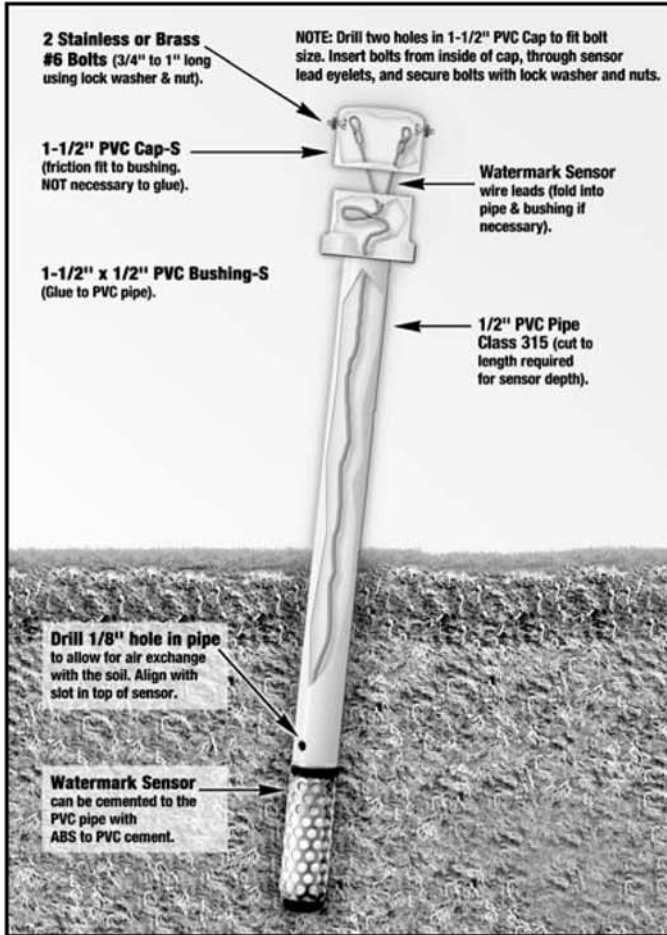
- Irrigation Scheduling • Water Table Monitoring
- Leak Detection • Agronomy Research • Environmental Monitoring
- Anywhere you need to know when or if the soil moisture level is changing

water tension, or matric potential, since that is the best reference of how readily available soil water is to a plant. The WATERMARK consists of stainless steel electrodes embedded in a defined and consistent internal granular matrix material that acts like a soil in the way it moves water. This matrix is encased in a hydrophilic material that establishes good hydraulic conductivity with the surrounding soil and is held in place by a durable stainless steel perforated shell with plastic end caps.

SPECIFICATION INFORMATION: The soil moisture measurement device, or sensor, shall represent soil moisture status in units of soil water tension or matric potential, registering in centibars (kPa) when read with a compatible reading device. It shall require no on-site calibration or routine maintenance and be of granular matrix type construction. It shall be durable, long-lasting, not subject to dissolving in a wet soil environment with an outer surface of stainless steel and ABS plastic. It shall be the WATERMARK sensor as manufactured by The Irrrometer Company of Riverside, California.

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Installation Examples:



WATERMARK