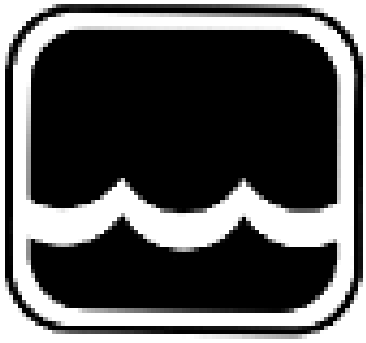
Global Water Instrumentation, Inc.



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(916) 638-3429
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AT210 Soil Moisture Sensor

7/21/2004

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I Inspection

Your Soil Moisture Sensor was carefully inspected and certified by our Quality Assurance Team before shipping. If any damage has occurred during shipping, please notify Global Water Instrumentation, Inc. and file a claim with the carrier involved.

II Description

Global Water's AT210 is a reliable and accurate sensor which measures the water saturation of soil. It can be used in a variety of applications, such as:

- Bioremediation
- Wastewater Reclamation
- Landfill Management
- Agriculture Monitoring and Irrigation

The Global Water Soil Moisture Sensor utilized Time Domain Reflectometry (TDR) to accurately measure the water content of soil. What this means for you is that this sensor is a no hassle, no maintenance, long lasting, probe this is very accurate.

How TDR sensors work is similar to radar. A high frequency signal is pulsed down the probe. The reflection of this signal is proportional to the dielectric constant of the soil surrounding the sensor. The dielectric reading from the sensor is then converted to water saturation and transmits to the monitoring equipment via a 4-20mA signal.

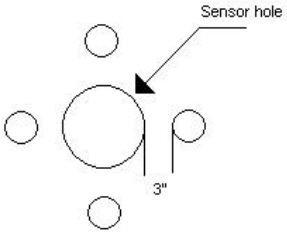
III Specifications

Power Requirements	12 VDC +/- 20% @ 40mA
Output	4-20 mA DC
Power Up Time	1 second from power up

IV Installation

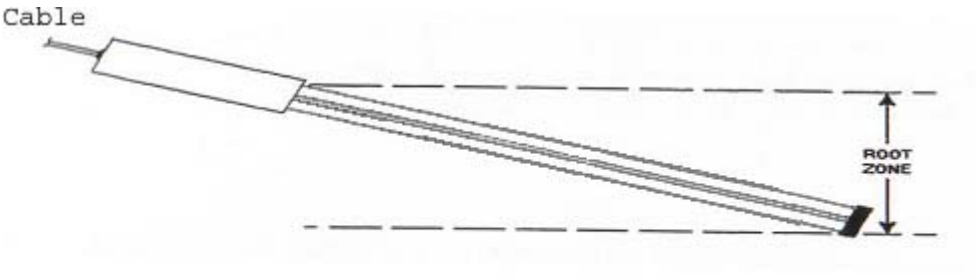
The AT210 Soil Moisture Sensors measure an 18” section of soil. The first 9” at the end closest to the cable and the bottom ½” are not included in the measuring area. The sensing area must be in contact with the soil and can be placed in any direction or depth.

In deep-rooted crops, such as orchards, it is normally installed vertically. In a vertical installation, make a ¾” wide hole and place the sensor at the desired measuring depth. The sensor must be in full contact with the soil to get an accurate reading. To make sure the soil is packed around the sensor; drive a rod about ½” in diameter into the ground about 3” away from the sensor, to the same depth as the sensor. Be sure the rod goes in parallel to the sensor to avoid hitting and breaking the sensor. Remove the rod and drive it down 3” away from the opposite side of the sensor. Then repeat the procedure at 90 degrees to the first set of 2 holes. Looking down, the pattern would look like this:



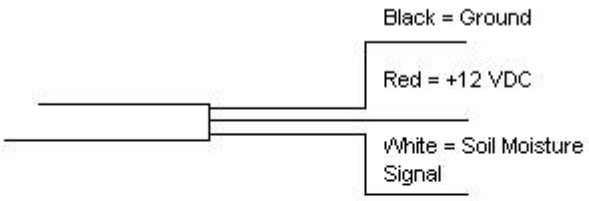
Pack dirt over the top to prevent water from preferentially entering the top. An alternate method of packing the soil against the sensor is to prepare slurry from the native soil and fill the hole. Then insert the sensor. The slurry will help fill the space between the sensor and the soil. Horizontal sensors would be installed in a trench and then back filled and packed.

To take an average for a range less then the sensors length, place the probe at an angle. The average at this depth is the reading that will be received. This will allow you measure at your “Root Zone”. To measure the water content at a given depth, place the senor horizontal at the depth to be measured.



Caution: <u>DO NOT</u> leave the sensor lying out in the direct sun.

V The Wiring for the AT210:



VI Trouble Shooting

Issue: Sensor reading incorrectly

1. Verify power source is supplying correct voltage.
2. Verify that the cable is not cut or nicked
3. Clean the sensor with water and a towel

Other issues:
Call Global Water for tech support: 800-876-1172 or 916-638-3429 (many problems can be solved over the phone). Fax: 916-638-3270 or Email: **globalw@globalw.com.**

When calling for tech support, please have the following information ready:

- ✓ Model #
- ✓ Unit serial number
- ✓ P.O.# the equipment was purchased on.
- ✓ Our sales number or the invoice number
- ✓ Repair instructions and/or specific problems relating to the product.

Be prepared to describe the problem you are experiencing including specific details of the application, installation, and any additional pertinent information.

In the event that the equipment needs to be returned to the factory for any reason, please call to obtain an RMA# (Return Material Authorization). Do not return items without an RMA# displayed on the outside of the package.

1. Clean and decontaminate the AT210 if necessary.

2. Include a written statement describing the problems.

3. Send the package with shipping prepaid to our factory address. Insure your shipment, Global Water's warranty does not cover damage incurred during transit.

VII Warranty

Global Water Instrumentation, Inc. warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment from factory. Global Water's obligations under this warranty are limited to, at Global Water's option: (I) replacing or (II) repairing; any products determined to be defective. In no case shall Global Water's liability exceed the products original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by Global Water Instrumentation, Inc., or which has been subject to misuse, negligence or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

The warranty begins on the date of your invoice.