

## Product Description

### Soil Moisture Sensing

Over the past 30 years, many attempts have been made to control irrigation systems through the use of moisture sensors buried in the soil. Nearly all were abandoned due to inaccuracies caused by varying soil temperature, chemistry, and compaction. **TIMES HAVE CHANGED!** Using digital signal processing technology, Acclima® has developed a moisture sensor that accurately reads soil moisture in any soil type or condition in which grass will grow.

### How It Works

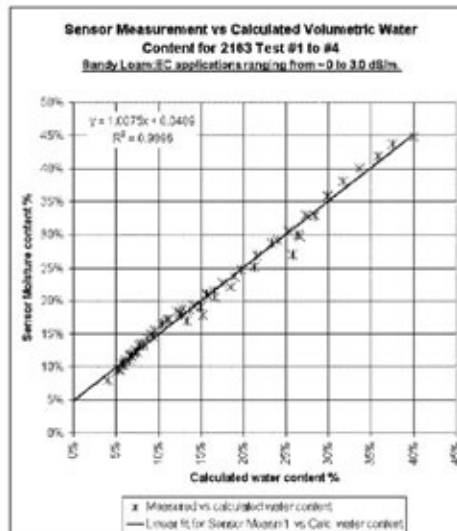
An electro-magnetic pulse is sent along the outer rod of the buried sensor. As this pulse travels the rod, it is delayed by the moisture content of the soil and distorted by the soil chemistry. As the pulse reaches the other end of the rod, it is digitized at 25 pico-second intervals (about how long it takes light to travel .3 inches). A proprietary digital signal processing system then extracts the critical information. **The Result** is a highly accurate absolute measurement of soil moisture as well as a reporting of soil temperature and conductivity.



### Independent Verification

Nelson by Acclima has submitted the Digital TDT™ Moisture Sensor to the Center for Irrigation Technology (CIT) at California State University, Fresno for independent verification of its accuracy. The graph below shows response points taken from numerous tests wherein the soil temperature varied from 72 to 110 degrees F, the soil moisture varied from near 5% to around 45%, and the electrical conductivity varied from 0 to 3.0 dS/m.

The response shows high linearity and tight correlation over those variations. No other commercial sensor exhibits this accuracy under these test conditions.



**CIT's conclusion:** The Nelson by Acclima sensor is very suitable for controlling soil moisture in conjunction with automated irrigation systems.

### Sensor Use

All Nelson by Acclima irrigation controllers utilize the Digital TDT™ Moisture Sensor as a “closed loop” feedback mechanism in controlling the irrigation process. The controller constantly interrogates the sensor for actual soil moisture readings, allowing the controller to intelligently apply only the amount of water lost through evapo-transpiration (soil moisture lost through evaporation and plant use). Thus, root zone moisture levels are perpetually maintained at user specified levels and efficient water use is optimized.

### Water Savings

Nelson by Acclima systems have been installed at several sites where watering records have been evaluated. These sites are under the supervision of professional maintenance personnel. Before the installation of the Nelson by Acclima system, these personnel carefully adjusted clock settings in conjunction with changing weather conditions. Documented water savings at these sites after installing a Nelson by Acclima system is averaging 35%.