Technical Bulletin

Bulletin No. **050 Rev A**
Subject: **Soil Moisture Sensing with RME Eagle and Sentar II controllers**

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Product Applicability: **RME Eagle and Sentar II controllers**
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1.0 INTRODUCTION

A soil moisture sensor is used as a water conservation device. With this type of sensor interface, an irrigation controller can more accurately irrigate based on the feedback of actual moisture conditions of the landscapes soil; thereby eliminating unnecessary irrigation and reducing water consumption. The proper use of this device along with the controllers irrigation flow monitoring will maximize water usage and conservation.

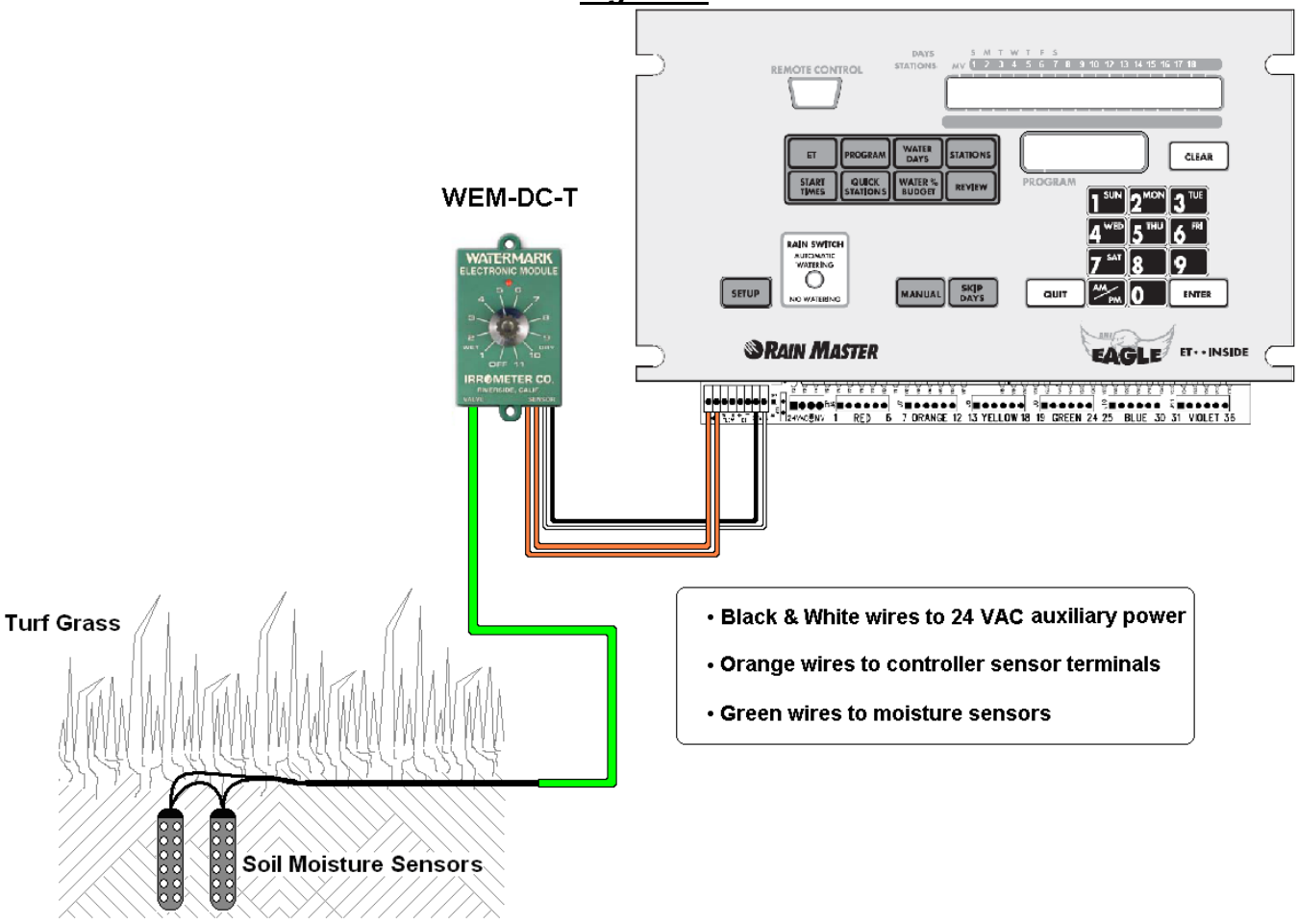
The RME Eagle and Sentrar II controllers are compatible with select models of soil moisture sensors. The WEM-DC-T control module by The Irrometer Company has been selected as an example in the application of soil sensing. The WEM-DC-T control module translates moisture readings from the attached WaterMark sensors and compares it to the moisture level setting selected by the user. The control module then sets the output switch state accordingly, thereby emulating a rain condition. Depending on conditions irrigation program schedules are either enabled or disabled; switch output closed (DRY condition) or switch output open (WET condition). The WEM-DC-T module installs near the irrigation controller and is powered by an auxiliary 24 VAC source or separate transformer. The WEM-DC-T sensor output connections are directly connected to the corresponding sensor input connection on the RME Irrigation Controller as depicted in Figure 1.

NOTE: **This technical bulletin illustrates the application of soil moisture sensing through the built in sensor interface at the controllers main panel. Only one moisture sensor may be connected to the controller. Using moisture sensing that interferes with valve wiring (i.e. breaking the common) will not permit the controllers flow management to work properly. This Technical Bulletin is provided as information for the installation of a Soil Moisture Sensor for use on the Rain Master RME Eagle and RME Sentar II controllers. The diagram in Figure 1 is for illustration purposes only and**

does not specify or detail all products or components presently available, but is provided to clarify the concept.

WARNING: Rain Master does not recommend splicing or interconnecting the Soil Moisture Sensor Control Module to the controller's transformer. Doing so may result in damage to the controller and WILL VOID the manufacturer's warranty. Power for the Soil Moisture Sensor MUST BE provided by the auxiliary 24 VAC source of the controller or a separate transformer.

Figure 1.



2.0 APPLICATION THEORY

2.1 The controller has only one sensor input and therefore can only be setup to utilize one moisture sensor. Other sensors like Rain and Freeze may be connected along with the moisture sensor; thereby permitting system shutdown in the event of these conditions. All sensors must be connected in a series wiring configuration.

2.2 Selecting the moisture sensors location (hydro zone) is important, as it will represent watering requirements for all stations assigned to the sensor. Select an area that is level and with uniform distribution of water.

3.0 INSTALLATION

3.1 Select a location and install the soil moisture sensor per manufactures specification.

3.2 Mount the WEM-DC-T control module next to or inside the irrigation controller. If mounting inside the controller enclosure, then place Quick Reference Card by controller so anyone servicing the system will know it is moisture controlled.

3.3 With power off, proceed with connecting the WEM-DC-T control module to the controller per manufactures specification. The sensor input at the controller may be labeled RAIN on some models. After completing all connections, turn power back on.

3.4 Ensure that the selected location (hydro zone) has its associated control valve configured as the last station to irrigate in the program cycle. This ensures that all other stations can irrigate if the moisture level is met during the last station run time.

4.0 CONTROLLER SETUP

1.1 Set up the sensor option at the controller using the SETUP key (refer to the user manual).

1.2 Program the controller accordingly to maximize the benefits of moisture sensing. Select one of the methods below:

1.2.1 Conventional Program Schedule:

Program the controller with multiple start times to deliver the desired amount of water for the hottest day in the season (5 daily start times are available per program on Eagle and Sentar II controllers). The WEM-DC-T control module will read the moisture sensors condition every 5 minutes. When the correct moisture conditions are met, the WEM-DC-T will change the state on the controller's sensor input to a WET condition. This allows only the necessary irrigation cycles to occur.

1.2.2 Cycle Soak Schedule:

A Cycle and Soak program can be used to break up the total station run time and permit other stations to receive a balance distribution of irrigation cycles. The Cycle and Soak feature can deliver a nearly unlimited number of cycles as compared to that of a conventional program schedule. Be sure to set each stations primary run time for watering in the hottest day in the season. The sensor will stop the program from applying water when moisture levels have been met.

NOTE: For detailed instructions on configuring a program for Cycle and Soak operations, refer to the user's manual.

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