

Cylindrical Soil Moisture Block

Model 227 Delmhorst

Configured for the CR10(X), 21X, CR23X and CR7 Dataloggers, the 227 gypsum soil moisture blocks provide a convenient method for estimating soil water potential. Individual calibrations are required for accurate readings of soil water potential. The Delmhorst cylindrical block is composed of gypsum cast around two concentric electrodes which confine current flow to the interior of the block, greatly reducing potential ground loops. Gypsum located between the outer electrode and the soil creates a buffer against salts which may affect the electrical conductivity.

Gypsum blocks typically last for one to two years. Saline or acidic soils tend to degrade the block, reducing longevity. To maximize longevity, it is recommended that gypsum blocks not used during the winter be removed from the field. Shallow blocks may become frozen and crack, while blocks located below the frost line may not maintain full contact with the soil. Regardless of depth, blocks left in the field over winter are subject to the corrosive chemistry of the soil.

Installation

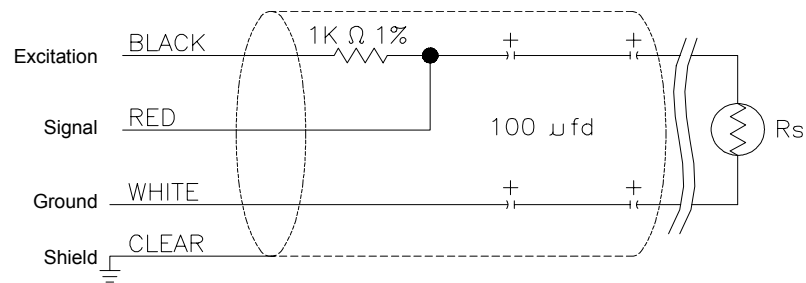
Delmhorst recommends the blocks go through two wetting-drying cycles before installation to improve block uniformity. For each cycle, the blocks should be soaked in water for one hour and allowed to dry.

Soil moisture blocks measure only the moisture they "see", therefore placement is important. Avoid depressions where the water will puddle after a rain. Likewise, do not place the blocks in high spots or near changes in slope unless you are trying to measure the variability created by such differences.

Prior to installation, soak the blocks for two to three minutes. Mix a slurry of soil and water to a creamy consistency and place one or two tablespoons into the installation hole. Insert the block, forcing the slurry to envelope the block. This will insure uniform soil contact. Back fill the hole, tamping lightly at frequent intervals.

Physical Connections

The 227 schematic is shown below. The capacitors block galvanic action due to the differences in potential between the datalogger earth ground and the electrodes in the block. Such current flow would cause rapid block deterioration. The 227 uses a single-ended analog channel, the red lead may be inserted into either a HI or LO input. The Table shows the datalogger wiring.



Colour	Function	CR10(X), CR500	21X, CR7, CR23X
Black	Excitation	Switched Excitation	Switched Excitation
Red	Signal	Single-ended Channel	Single-ended Channel
White	Signal Ground	AG	⊥
Clear	Shield	G	⊥