

KestrelMet 6000

Cellular Weather Station

Soil Sensor Array



www.kestrelmet.com

Soil Sensor Array

The soil sensor array consists of 3 probes, each on a 15' cable. Each probe measures soil water tension using a Watermark sensor and soil temperature. Probes are typically buried at 3 different depths corresponding to the root zone of the target vegetation.

Before connecting the soil sensor array, flip the power switch on the underside of the station to the "off" position. Remove the black protective cap from the silver aux sensor connector on the underside of the station.



Figure 1

Soil Sensor Array Connector

Align the ridge on the inside of the station connector with the channel on the soil sensor array connector (see red arrows). Press the two fittings together as you screw the threaded metal coupling together. You should feel detent ridges as the threads are tightened together completely. A completely tightened fitting may still have some threads showing between the two sides of the coupling, as shown on the far right in Fig 3. Once the coupling is tight, the station can be powered on and will begin transmitting soil temperature and soil water tension data. Note: Wrenches are not required to achieve a watertight connection.

The white housing of the soil array sensor can be attached to the lower section of the station mast using the provided zip ties. Take care to attach it so that there is no tension on the cable going to the station or on the cables connecting the soil probes.



Figure 3



Figure 4

Soil Sensor Array Probe ID

Probe numbers are marked with zip ties as shown in Fig 5. (i.e. The probe with two zip ties will be displayed as Soil Moisture 2 / Soil Temperature 2 on your dashboard) Make a note of the depth for each probe. The sensor names on your KestrelMet.net dashboard can be edited to include the depth (i.e. Soil Moisture 36")

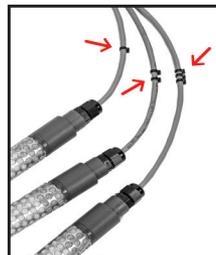


Figure 5

Soil Sensor Array Probe Placement Overview

Plan soil sensor array locations and probe depths according to your application. The recommended references in this manual provide guidance based on soil type, crop type, and irrigation options.

Recommended tools and supplies:

7/8" soil auger or coring tool, 3/8" dowel or rod, bucket, water jug, zip ties

Note: if seasonal sensor removal is required, 1" Sch 40 PVC pipe can be attached to each probe with provided adapters and screws. See red arrows in Fig 6.



Figure 6

1. Soak probes overnight in irrigation water. Several soak/dry cycles are recommended for new probes.
2. Cut dowel or 1" Sch 40 PVC pipe to desired lengths and mark target depth. If pipe is left in place, it should be capped.
3. Drill a 7/8" hole to the desired depth.
4. Prepare 2-3 cups of a soil slurry (no rocks or organic matter).
5. Pour slurry into hole to a depth of 2-3"
6. Insert soil probe into hole and press into the slurry.
7. Pour remaining slurry into the hole and tamp using the dowel.

Informational Videos



U of Nebraska
Watermark probe
installation



MMM consultants
Watermark probe
installation



U of Nebraska
irrigation scheduling
basics



U of Georgia
irrigation scheduling



Manuals and websites



KestrelMet.net
& Support



Manuals and websites:

The KestrelMet 6000 AG Weather Station helps farmers and operators maximize yields with the minimum required resources. Here you'll find helpful guidance and information regarding best practices in irrigation management.

Watermark installation manual

<https://www.irrometer.com/pdf/instruction-manuals/landscape/712%20InstallToolMnl%20web1.pdf>

Available Water Conversion Tables for Soil Moisture Monitors

<https://waterquality.montana.edu/farm-ranch/irrigation/irrigation-tools/shallow-conversion.html>

Irrigation Scheduling Strategies When Using Soil Water Data

<https://extensionpubs.unl.edu/publication/9000020403114/irrigation-scheduling-strategies-when-using-soil-water-data/>

How to use Watermark sensors for irrigation

<https://www.uaex.uada.edu/publications/pdf/FSA57.pdf>

Moisture Sensor Agricultural Irrigation Design Manual

<https://www.irrometer.com/pdf/supportmaterial/ADG2006.pdf>

Soil water tension irrigation criteria for various crops

<https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/em8900.pdf>

Watermark Granular Matrix Sensor to Measure Soil Matric Potential for Irrigation Management

<https://extensionpublications.unl.edu/assets/pdf/ec783.pdf>

Product and Safety Information



WARNING: Read and follow these guidelines to reduce the risk of injury or death.

- ✓ Fully read your KestrelMet 6000 user manual to familiarize yourself with the product's features before operating.
- ✓ Failure to operate this product correctly can damage it or produce inaccurate readings.
- ✓ Use good judgement whenever you rely on station readings to make decisions regarding safety, health or property protection.
- ✓ Allow a margin of safety for changing conditions and reading errors (2–3% of readings is recommended).

Be certain your weather station's accuracy has not been compromised by improper installation, contamination or damage. When in doubt, verify your weather station's accuracy against a known good standard for the measurement in question, and contact Kestrel Instruments Technical Support with any questions or concerns.



NOTICE: All instructions and associated documents are subject to change at the sole discretion of the manufacturer. For up-to-date product information, visit kestrelinstruments.com/support

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