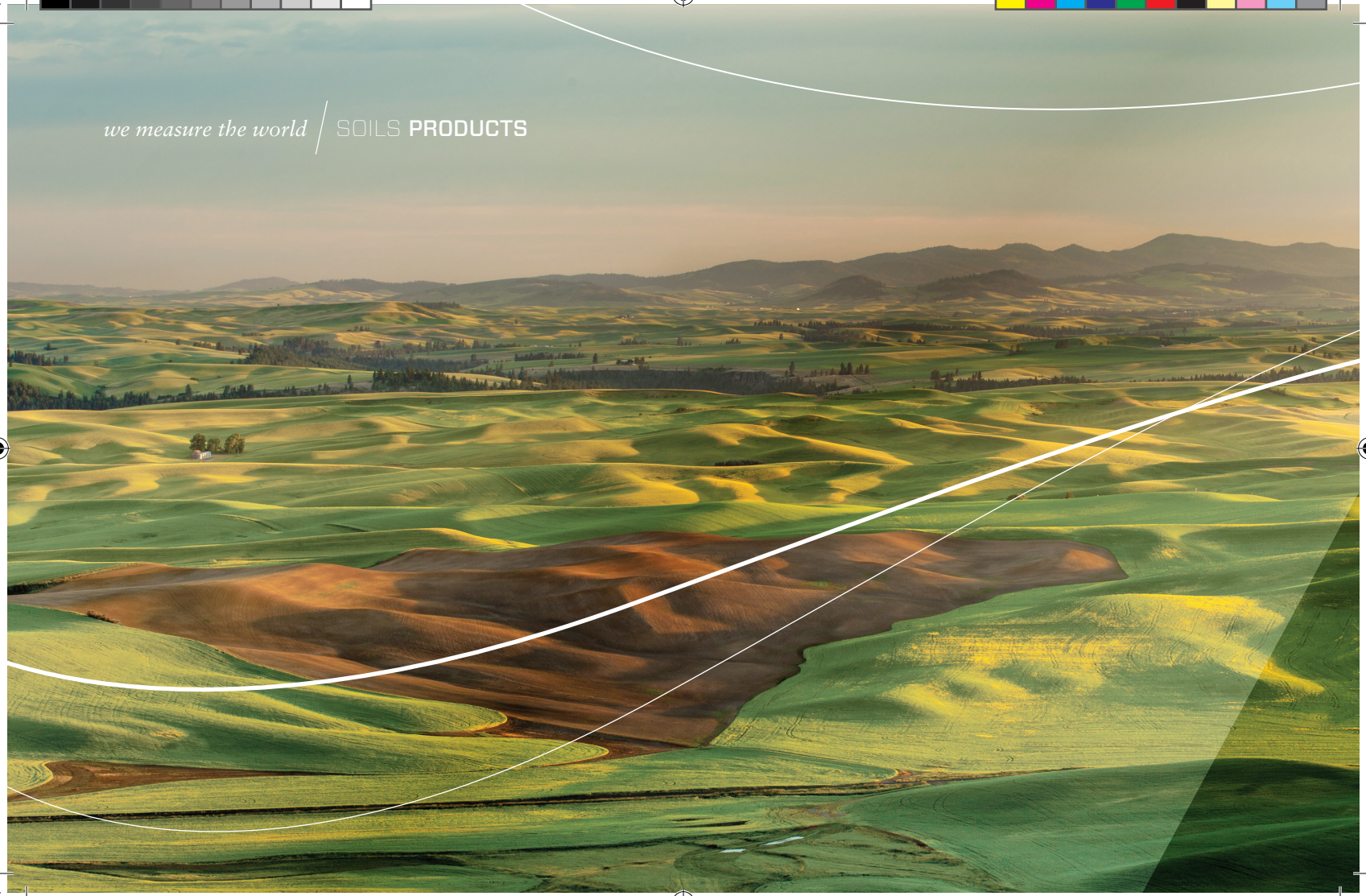

# QUICK START GUIDE

DECAGON DEVICES

## SOIL MOISTURE SENSORS

EC-5, 10HS, 5TE, AND 5TM



# Read First

***This guide describes how to start using your sensor immediately.***
***If you read nothing else, read this guide.***

For detailed information on your sensor, download the user manual:
***DECAGON.COM/EDUCATION/MANUAL-SMS***

All Decagon products have a 30-day satisfaction guarantee and a one-year warranty. Incorrect sensor installation can void your sensor warranty.

If you are using the sensors in lightning-prone areas, follow our directions for providing protection for the sensors at: ***DECAGON.COM/LIGHTNING***

# Pre-Installation

Before installing your sensor in the field, set up and test your system (sensors and data loggers) in your lab or office. Make sure you are using the most up to date software and firmware by checking your Decagon data logger page for updates.

1

(Optional) Take some measurements with the sensor using a ProCheck. Keep in mind that sensors will not necessarily read 100% VWC in water and 0% in air. The sensors are optimized to read soils, and the factory mineral calibration is done in real soils; not air and water.

You can check sensor functionality in air and water:

| Model Name | Water | Air |
|---|---|---|
| *EC-5* | *50-60%* | *Slightly Negative* |
| *10HS* | *50-60%* | *Slightly Negative* |
| *5TE* | *~98%* | *Slightly Negative* |
| *5TM* | *~98%* | *Slightly Negative* |

*Values are given in % VWC using the factory mineral soils calibration.*

2

Sensors vary less than 1% from one sensor to the next. If you would like to check this for yourself, compare the output of the sensors when they are placed in ethylene glycol rather than water. Ethylene glycol has a dielectric permittivity similar to that of unsaturated soils.

3

Watch our installation video ***DECAGON.COM/INSTALL*** for important set-up information. Installation methods and protection measures (including using PVC pipe to protect cables where they emerge from the soil) will have a critical impact on sensor function and data quality.

# Sensor Overview

# Installing Sensor

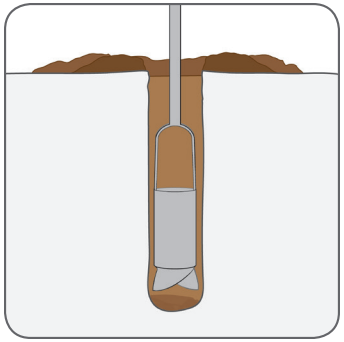
The EC-5, 10HS, 5TE and 5TM can all be installed using the same installation method.

The proper technique and steps required are illustrated to the right. Please follow each step as stated to ensure accurate readings.

Please see the complete manual for more extensive set-up and installation instructions.

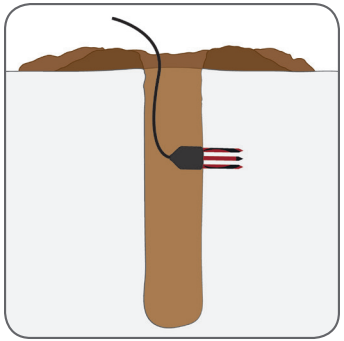
1 Create Hole

*Auger or trench a hole to the desired sensor depth.*



2 Insert Sensor

*Insert the sensor into undisturbed soil vertically, or horizontally.*

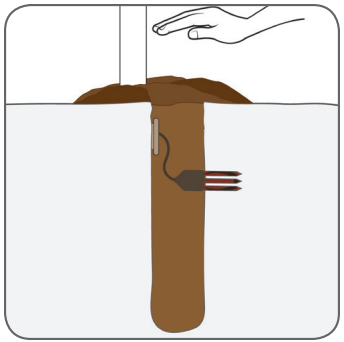


## 3 Check Reading Accuracy

*(Optional) You can use the ProCheck handheld to verify your sensor is reading accurately.*

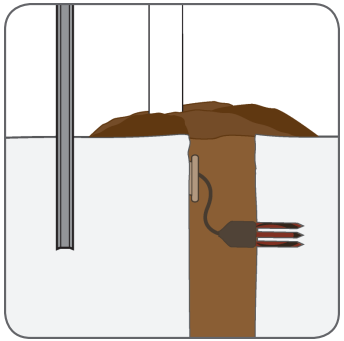

## 4 Backfill Hole

*When backfilling the trench or hole, be sure to pack the soil to the approximate density of the surrounding soil.*



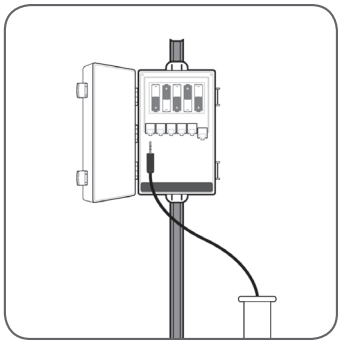
## 5 Secure and Protect Cables

*It is important to protect your cables with PVC casing above the ground surface.*



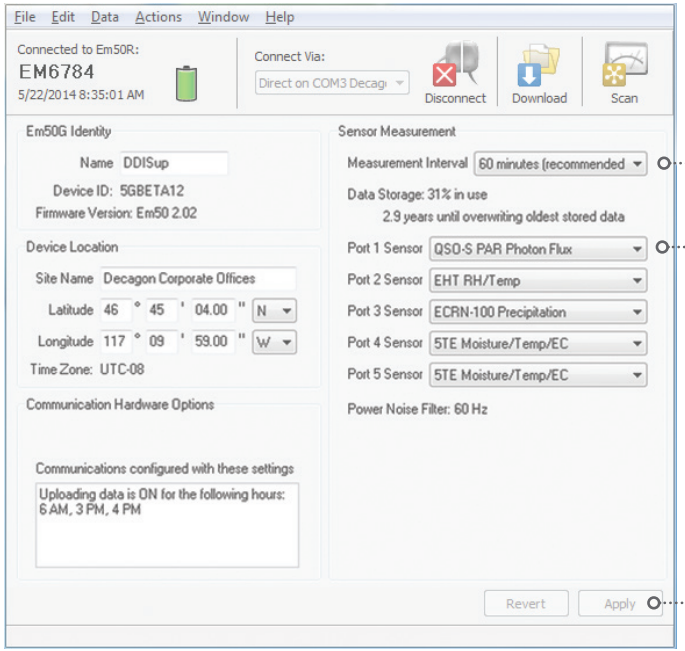
## 6 Plug in Sensor and Configure Logger

*See next page for more details about configuring your sensor.*



# Logger Configuration

*Configuring your logger in ECH2O Utility*



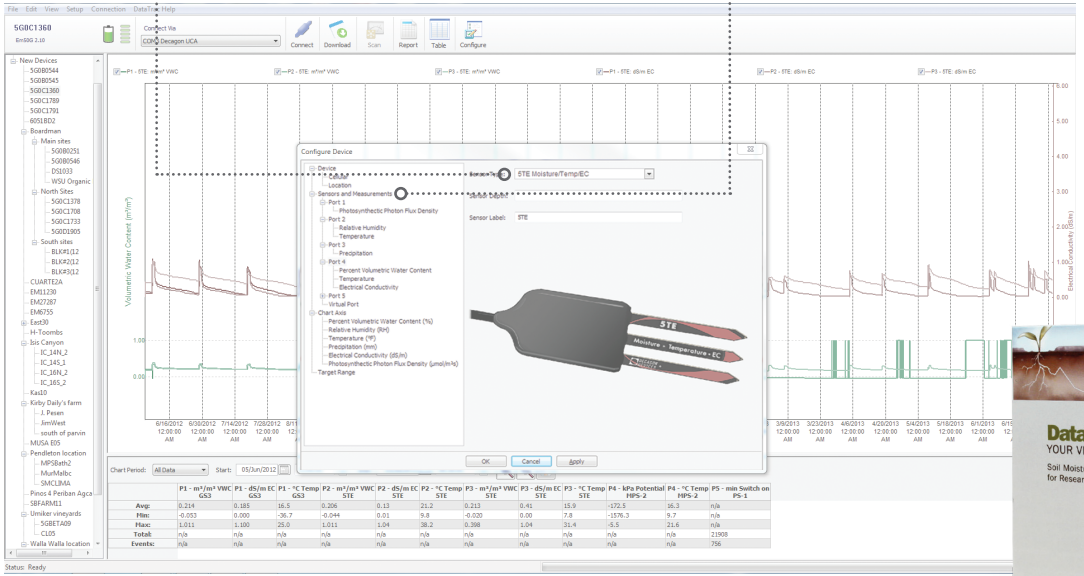

1 *Pick your measurement interval*

2 *Select the sensor plugged into each port*

3 *Select "Apply" to save settings*

1 *Select the sensor plugged into each port*

2 *Pick measurement intervals by selecting "Sensors and Measurements"*




# Soil Calibration Info

Decagon has developed factory calibrations that can be used with typical soils and some soilless substrates. These calibrations are incorporated into Decagon software. If you choose to do a custom calibration, you only need to calibrate one sensor of each type (not every individual sensor) to your specific soil.

Visit ***DECAGON.COM/CALIBRATE*** for complete instructions on how to custom create calibrations for yourself.

***NEED US TO CREATE A CUSTOM CALIBRATION FOR YOU?***

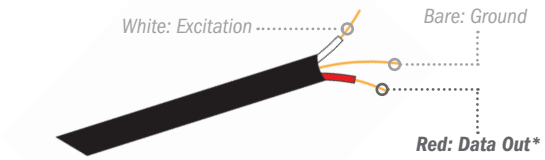
*Decagon offers a custom calibration service that will get you on your way to accurately measuring and collecting the data you need.*

# Non-Decagon Loggers

Our user manuals and integrator's guides have complete information for interfacing Decagon Sensors with non-Decagon loggers. In addition, we suggest that you use the specific logger manual during set-up.

***Sensor Cable 3-Wire Interface***

! *Please note that all Decagon sensors use the* ***RED WIRE*** *for* ***DATA OUT, NOT EXCITATION***




| Model | Excitation | Output |
|---|---|---|
| *EC-5* | *2.5-3.6 V* | *Analog* |
| *10HS* | *3.6-15V* | *Analog* |
| *5TE* | *3.6-15V* | *Serial, SDI-12* |
| *5TM* | *3.6-15V* | *Serial, SDI-12* |

# Related Products

GS1

*Volumetric Water Content*

GS3

*Volumetric Water Content*

*Electrical Conductivity*

*Temperature*

MPS-2

*Soil Matric Potential*

*Temperature*

MPS-6

*Soil Matric Potential*

*Temperature*

*Most Accurate*

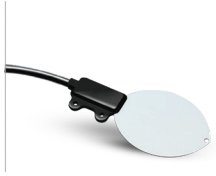
RT-1

*Rugged Temperature Sensor*

ES-2/ES-2F

*Rugged Temperature Sensor*

*Electrical Conductivity*



Leaf Wetness Sensor

*Duration of Leaf Wetness*

ECRN-50

*Low-Resolution Rain Gauge*

ECRN-100

*High-Resolution Rain Gauge*

VP-3

*Temperature, Relative Humidity, Vapor Pressure*

DS-2

*Sonic Anemometer, Wind Speed, Direction*

Cup Anemometer

*Wind Speed, Direction*

PYR/QSO-S

*Total Solar Radiation, PAR Photon Flux*

SRS

*Measures NDVI and PRI*

Drain Gauge

*Deep Drainage Monitor*

CTD Sensor

*Water Depth, Temperature, Electrical Conductivity*


EM50 Logger Series

*Radio, Cellular, or Direct Connect Logger*

ProCheck

*Sensor Read-Out and Storage System*

Seller warrants new equipment of its own manufacture against defective workmanship and materials for a period of one year from date of receipt of equipment (the results of ordinary wear and tear, neglect, misuse, accident and excessive deterioration due to corrosion from any cause are not to be considered a defect); but Seller's liability for defective parts shall in no event exceed the furnishing of replacement parts F.O.B. the factory where originally manufactured. Material and equipment covered hereby which is not manufactured by Seller shall be covered only by the warranty of its manufacturer. Seller shall not be liable to Buyer for loss, damage or injuries to persons (including death), or to property or things of whatsoever kind (including, but not without limitation, loss of anticipated profits), occasioned by or arising out of the installation, operation, use, misuse, non use, repair, or replacement of said material and equipment, or out of the use of any method or process for which the same may be employed. The use of this equipment constitutes Buyer's acceptance of the terms set forth in this warranty. There are no understandings, representations, or warranties of any kind, express, implied, statutory or otherwise (including, but without limitation, the implied warranties of merchantability and fitness for a particular purpose), not expressly set forth herein.

Application of Council Directive: 2004/108/EC and 2011/65/EU to which conformity is declared: EN 61326-1:2013 and EN 50581:2012

Manufacturer's Name: Decagon Devices, Inc.
Model Number: EC-5, 10HS, 5TE, 5TM
Year of First Manufacture: 2014, 2008, 2005
Type of Equipment: Soil Moisture Sensor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Soils PRODUCTS