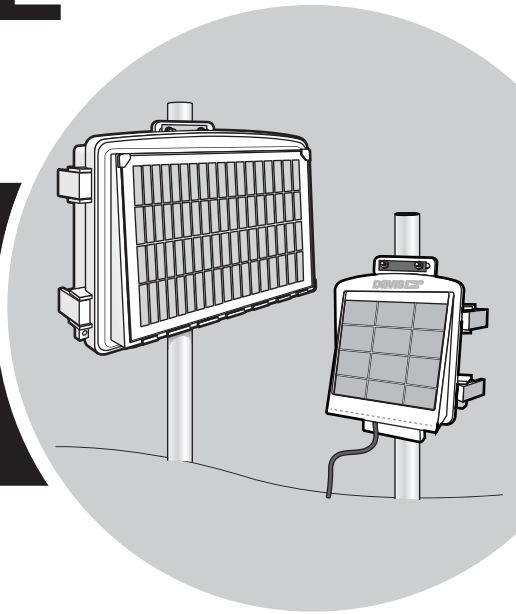
USER MANUAL

EnviroMonitor® Sensor Node



Product number 6810

Davis Instruments, 3465 Diablo Avenue, Hayward, CA 94545-2778 U.S.A. • 510-732-9229 • www.davisnet.com

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Changes or modification not expressly approved in writing by Davis Instruments may void the warranty and void the user's authority to operate this equipment.

FCC ID: IR2DWW6810

IC: 3788A-6810

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This product complies with the essential protection requirements of the EC EMC Directive 2004/108/EC; Low Voltage Directive 2006/95/EC; FCC Part 15.247 902-928 Mhz; and FCC Part 15.247 sub-part C DTS 2400-2483.5 MHz. Complies with Canadian Standard IC RSS 247 Issue 1 902 -928 MHz and RSS-Gen Issue 4 FHSS. Complies with EN 300 220-2 V2.4.1; EN 300 328 V1.9.1; EN 300 328-3 V1.6.1; EN 301 489-3, EN 301 489-17 V2.2.1; EN 61000-4-2 (2009) FSD; EN 61000-4-3 (2006) Radiated Immunity; EN 61000-4-4 (2004) EFTB; and EN 61000-4-6 (2009) Conducted Immunity.

CE EC-Declaration of Conformity

Directive 1999/5/EC (R&TTE Directive)

Manufacturer / responsible person: Davis Instruments
Perry Dillon, Compliance Engineer

Address: 3465 Diablo Ave., Hayward, CA 94545 USA

Declares that the product:

6810 and 68XX

Complies with the essential requirements of

Article 3 of the R&TTE 1999/5/EC Directive, if used for its intended use and that the following standards have been applied:

1. Health (Article 3.1.a of the R&TTE Directive)
   Applied standard(s)(EC recommendation 1999/519/EC)
2. Safety (Article 3.1.a of the R&TTE Directive)
   Applied standard(s)(EN 60950-1:2006/A11:2009/A1:2010/A12:2011)
3. Electromagnetic compatibility (Article 3.1.b of the R&TTE Directive)
   Applied standard(s)EN301489-1, V1.8.1, EN301489-7, V1.3.1,
4. Efficient use of the radio frequency spectrum (Article 3.2 of the R&TTE Directive)
   Applied standard(s)EN301511, V9.0.2

The technical documentation relevant to the above equipment will be held at:

Davis Instruments at 3465 Diablo Ave, Hayward CA 94545

Welcome to EnviroMonitor Sensor Node

An EnviroMonitor System includes a Gateway and a number of Nodes that house up to four sensors each. The Nodes transmit the sensor data to the Gateway, either directly from Node to Gateway, or indirectly by “hopping” from Node to Node to Gateway via mesh network operating at 900 MHz (different in the EU). The Gateway then sends the data via cellular connection to the Cloud.

EnviroMonitor can be customized for any size installation. Each Gateway can receive from as many as 50 Nodes. Additional Gateways can be added to your system to receive from another set of Nodes.

Before installing sensors and sensor nodes, should first set up and activate your EnviroMonitor Gateway.

You should have already downloaded the EnviroMonitor Mobilize Setup app on the smartphone you will use while setting up the nodes. Install the Mobilize Setup App on your Smartphone. Scan the applicable QR code below or search for Mobilize Setup on iTunes or the Google Play Store.

PLACEHOLDER

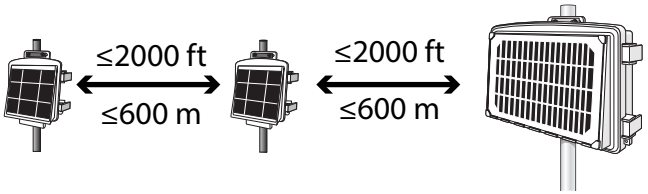
Mobilize Setup
iPhone App

Mobilize Setup
Android App

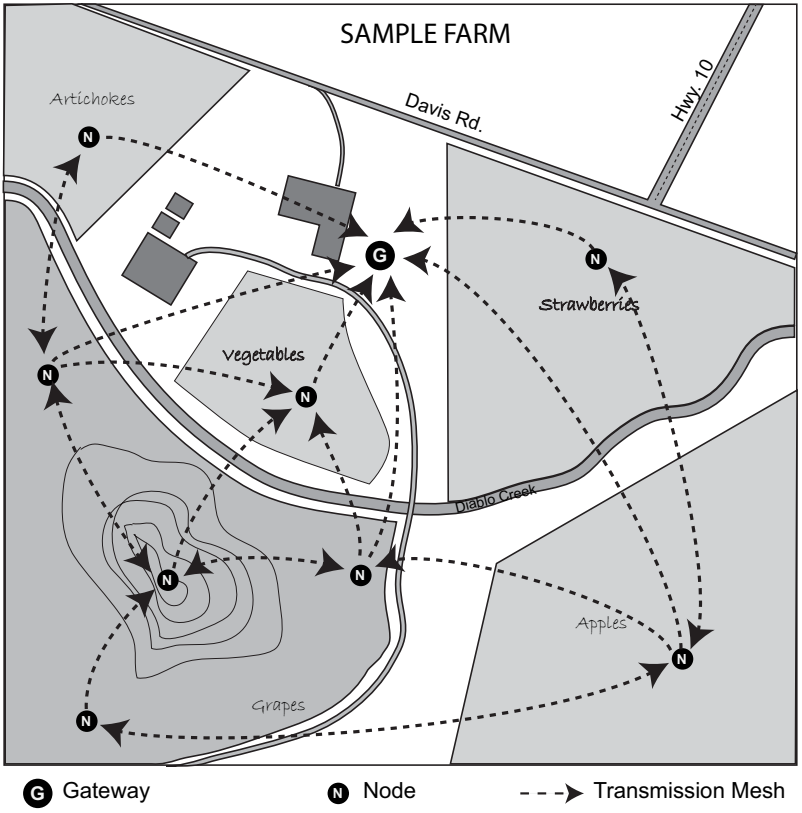
Note: Cellular connection is not required for set up of the nodes. If cellular connection is not reliable where the Nodes will be installed, make sure to open the app before going out to the site while still connected to the internet. This will ensure your app has the latest information.

Plan Installation of Nodes

Before installation, plan your system. After determining which sensors you want and where you want to install them, make sure you have the correct number of Nodes to support those sensors. The maximum distance between Nodes and Gateway will be different for installation depending on many factors, but in ideal conditions may be up to 2,000 feet (600 meters).

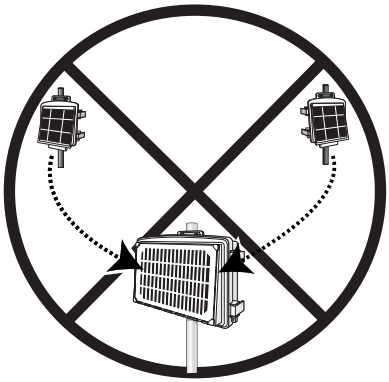


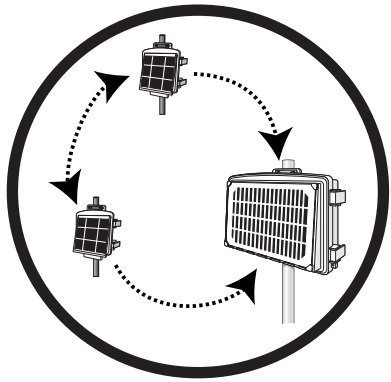
Make a sketch of your installation to get an idea of where the Gateway and Nodes should go.



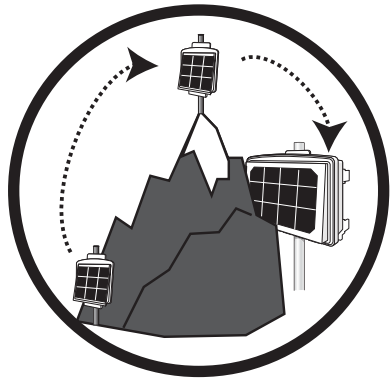
Siting the Nodes

- Make sure each Node is sited so that it has at least two ways to reach the Gateway. It should be within transmission distance (up to 2,000 feet/600 meters) of either two other Nodes, or the Gateway and another Node. This allows the mesh to "heal" any temporarily impaired transmission paths and will ensure data reaches the Gateway. You can have any number of hops from Node to Node. A Node can even be installed simply to transmit data from more distance Nodes to the Gateway, without any sensors installed in it. By planning the system's "transmission mesh," data can be relayed in from the most remote corner of your installation.



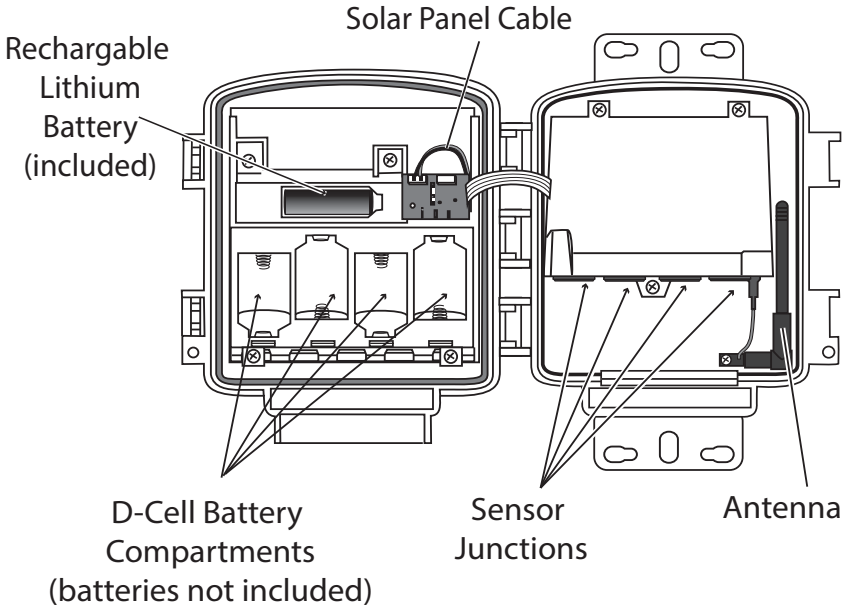


- Nodes can also be used to transmit data around or over obstacles, such as hills.

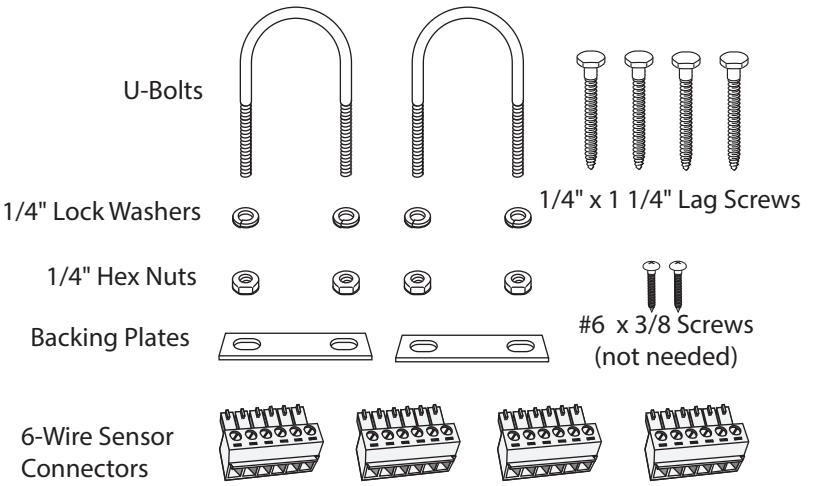


Installing the Nodes and Sensors

Contents of Node package



Hardware Kit



Requirements & Tools for Installation of Nodes and Sensors

- Node with at least one sensor
- Small flathead screwdriver
- 4 D-cell batteries
- Smartphone with Setup app installed
- Wire cutter/stripper
- Mounting pole or post
- Wrench
- Screwdriver if mounting to a post

Note: You should install Nodes from closest to Gateway to furthest from Gateway so that each Node can establish a connection with the Gateway or a Node that has already been installed.

Prepare Node for Installation

Plug in the solar panel cable. Install 4 D-cell batteries making sure they are installed according to the + and - marks in the battery compartment.

The Node will power up. LEDs will indicate connection.

Connect Node to Gateway

1. Take the Node and smartphone to the general location in which you wish to install your Node.
2. Make sure the phone's Bluetooth is on.
3. Open the app on the smartphone. Tap "Add a Node."
4. Bring the phone close to the Node or gently tap the phone to the node.
5. Follow the prompts in the app as it finds the Node and connects it to the Gateway. This transmits the Gateway's identifying information to the Node and allows its data to be received by the Gateway. Having specific identification for each Gateway/Node pair allows you to have multiple Gateways without cross transmission. Once the Gateway identification is transmitted to the Node, it will communicate only with that Gateway.
   You will hear two beeps to indicate that the Gateway's identifying information has been transferred to Node. Using the app, you will be see this Node's serial number appear on the list for proper Gateway.
   You will know that the connection between the Node and Gateway is complete when you see green light. If they cannot "find" each other, try moving the Node to a different location. If the location of the Node can not be changed, consider installing a different Node closer to the Gateway, to act as a repeater. It does not have to have any sensors installed.

Install the Sensor(s)

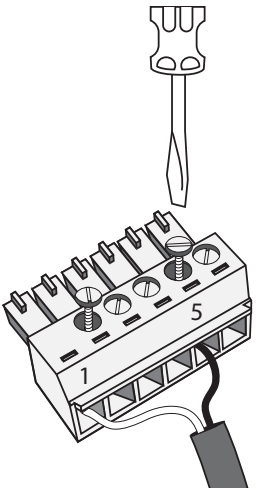
Each note has four sensor junctions. You can install up to four sensors in these junctions.You can install the sensors before or after mounting the node shelter. For

example, if you plan to mount the node on a tower, you will want to install the sensor first.

1. Install the sensor in the into the sensing medium per the manufacturer's instructions and the needs of the environment, making sure the sensor is installed within cable reach of the Node.
2. Wire the sensor into one of the 6-wire sensor connectors. Each sensor has specific wiring specifications. In the app, find the sensor on the Sensor Junction Wiring Diagram to determine how it should be wired to the junction.

Note: If the sensor has a RJ-jack on its cable, remove it and strip the wires.

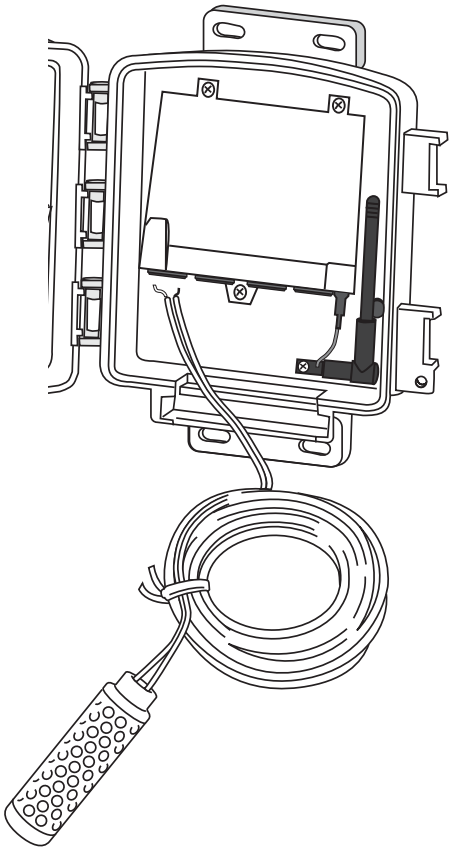
3. Using a small flathead screwdriver, loosen the appropriate screws and insert the bare wires.



CAUTION: Do not let bare wires touch each other.

4. Tighten the screws.
5. Plug the sensor junction into the sensor port indicated by the app.
6. Run the sensor cable down and out of the box through the bottom. Make sure it will be enclosed by the foam when the shelter door is closed.

7. When all sensors are installed, close the shelter door, making sure all cables are against the foam and not the hard plastic of the door.



Mount the Node Shelter

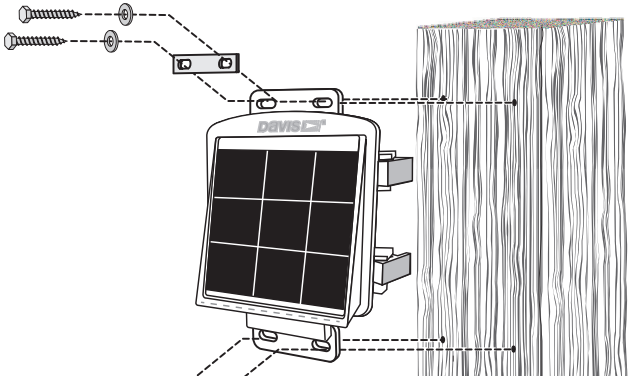
The Node shelter can be mounted on a pole or a flat surface such as a wall or a wooden post.

It is important that the shelter be mounted so that the solar panel gets the greatest amount of sunshine -- the solar shelter should be facing south (in the northern hemisphere) or north (in the southern hemisphere).

Tip: Mounting the shelter may be easier if done by two people.

Mounting on a Flat Surface

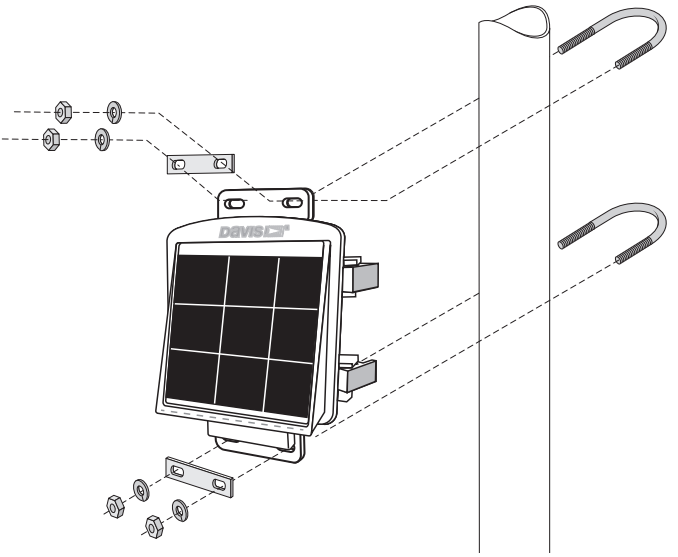
Attach the shelter to the mounting surface in the desired location using the lag screws and backing plates as shown below. Use a pencil or a center-punch to mark the location of the pilot hole.



Mounting On a Pole

Mount the Gateway onto a pole with an outside diameter of 0.84" to 1.84" (21 mm to 27 mm) using the U-bolts, backing plates, washers, and hex nuts provided.

Note: For mounting on larger diameter pipes, the housing can accommodate U-bolts with 5/6" (8 mm) threads for pipes up to 2.40" (61 mm) outside diameter (not provided).



Troubleshooting

? ***How can I tell if my battery voltage is getting too low?***

Our server will monitor your battery voltage and will trigger an e-mail warning if it should get critically low (approximately 14 days of power). The e-mail will go to both the registered customer's e-mail address as well as the alarm e-mail address (if one has been set up).

? ***My installation is in a low light area. Can I add another solar panel?***

Yes. You can add an Extra Solar Panel Kit (product number 6616).

? ***My status LEDs are not blinking.***

Ma

? ***No data is being uploaded.***

Try these steps:

- Mak

? ***What do the LED lights indicate?***

If there is an error in getting a signal, the status LEDs will flash to indicate the type of error.

Refer to the table (appropriate for your model) below to ascertain what the LEDs mean so that you can report the problem to Technical Support.

Node Error Messages

LED Behavior		Indicates	What to do
Lower LED (Network)	**Upper LED (Wx Status)**		
	Blinks red once, pauses and	No cellular signal found.	Move the Vantage Connect to a different
Rapidl blue o while u LED b indicat code. repeat		code number.	e Connect may n in this n, but you may move if e. t Tech Support ort the error

Contacting Davis Technical Support

For questions about installing or operating your EnviroMonitor Node, please contact Davis Technical Support. We'll be glad to help.

Online	**www.davisnet.com** See the Weather Support section for copies of user manuals, product specifications, application notes, software updates, and more.
E-mail	**support@davisnet.com**
Telephone	(510) 732-7814 Monday - Friday, 7:00 a.m. - 5:30 p.m. Pacific Time.

Specifications

General:

Operating Temperature	-40° to +140°F (-40° to +60°C)
Charging Temperature	-4° to +120°F (-20° to +49°C)
Storage Temperature	-40° to +140°F (-40° to +60°C)
Current Draw	, 1A peak
	10: 146mA typical
Transmitter F	00 MHz (Class 4)
	1900 MHZ (Class 1)
Housing Material	Rugged ASA Plastic
Dimensions (width x length x height)	13.75 X 10 X 4.15 inches (34.9 X 25.4 X 10.5 cm)
Weight	8.14 lbs. (3.69 kg)
Batteries	XXX
Dimensions without tabs	5.95" L x 3.70" H x 2.00" D; 151 mm L x 98 mm H x 51 mm D
Certifications:	FCC PTCRB CE Carrier

PLACEHOLDER

Enviromonitor® Node

Product Numbers 6810, 68XX Document Number: 07395.339 Rev. A January 12, 2016

Davis Instruments

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