WebLink Sensor User Guide

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Introduction

airCarbon WebLink Sensors are manufactured in several variants that measure different types of environmental data, such as temperature and carbon dioxide. Although each variant measures fundamentally different data, all WebLink Sensors provide a similar user interface and menu. This document will guide you through setup and usage of all airCarbon WebLink Sensors. *Thank you for choosing airCarbon for your environmental monitoring needs. If you have suggestions or comments, please contact us at http://aircarbon.com/contact.*

Setup

Your package should include your WebLink Sensor, an AC adapter, and an Ethernet cable. Connect one end of the Ethernet cable to an open port on your network and the other end to the sensor. Plug the AC adapter into a wall socket and connect the power plug to the sensor. You should see the serial number momentarily displayed and then the data display.

After data is displayed on the sensor screen, wait for 30 seconds, then press the Menu button once to see the data send status. For normal data transfer to the Internet, the status will read "Data sent at HH:MM UTC". (The time is Universal Time Coordinated.) If you see this screen, your sensor is working properly. If the send status persists as "No server contact", you have a problem with your network setup. See the *Troubleshooting* section below.

Do not setup your sensor in a place that experiences direct sunlight. Direct sunlight will bias your temperature and relative humidity data. Do not setup your sensor in areas where it will be exposed to water. WebLink Sensors are not waterproof and the warranty will be void if directly exposed to water.

If your network requires a static IP or wireless setup, see the appropriate sections in the *Advanced* portion of this document.

Carbon dioxide altitude/pressure setup

If you have a carbon dioxide sensor you need to set your typical atmospheric pressure immediately for proper operation. Typical atmospheric pressure can be estimated using your altitude. To find your altitude, many tools are available on the internet. For many locations Google Earth can be used to find your altitude. For even better results, absolute (NOT sea-level adjusted) pressure available from a local weather station can be used directly.

To set either the pressure or altitude, press the *Menu* button until you see the "Altitude/Pressure" screen. Use the +/- buttons to set your altitude in meters or pressure in kPa. Once finished, press the *Menu* button until you see the data display again. Your pressure setting is now saved in the sensor. Finally, verify the calibration of the carbon dioxide sensor by measuring carbon dioxide outdoors. Let you sensor stabilize outside for 20 minutes. The CO_2

measurement should be close (+/- 30 ppm) to 400 ppm. If it is outside this range, consult the *Carbon Dioxide Calibration* guide available on the aircarbon.com website for more information on calibration and verification.

Features

Audible Alarms

WebLink Sensors offer audible alarms for the local user. A beep will sound indefinitely when the data moves outside of a user-predefined range. Triggers can be set up for a low or a high trigger on any data type.

To set a trigger, press the *Menu* button until you come for the alarm that you would like to set. For example, if you want to set a low temperature alarm, press the *Menu* button until you see the "Temp Low Alarm" screen. Then, press the +/- buttons until the alarm level is set. Finally, hold the + and – buttons to activate the alarm. (The status will change to "ON".) If necessary, use the +/- button to adjust the alarm level again. The picture below shows a temperature alarm set. When the sensor records a temperature below 15ºC, the audible alarm will be triggered.

When an alarm triggers, the beeper will sound and the screen will flash between the data screen in blue and the "Alarm Triggered" screen in red. The alarm will continue to sound and the screen continue to flash until a user presses any button. When a user presses any button, the triggering alarm will be deactivated until the user re-enables it.

Troubleshooting checklist

For the WebLink Sensor to communicate successfully with the Internet, several network items must work correctly. The following checklist will help you resolve any problems that you may be having. Follow it in order to find the source of your problem.

___ Does the sensor power up?

When your sensor first powers up, the display shows a serial number and then a data screen. If your sensor does not show anything after connecting it to power, you should ensure that there is actually power at the outlet you are using. If no power problems exist, there is probably a problem with the sensor, contact airCarbon Sensors for a return authorization number (RMA).

___ Does the sensor show data after power up?

After initial display, you should see current data. If you sensor appears to be constantly rebooting or does not show data, you will need to send it back for service. Contact airCarbon for a return authorization number (RMA) and explain the condition.

___ Does the sensor show *Waiting for Link* and then *No Link* soon after powering up?

Your sensor is not connected to a live network connection. Check your wiring and then consult your network administrator for assistance. Even in this condition, your sensor will show data, but it will not send data to the Internet. You will not be able to view data on aircarbon.com until your network connection problem is resolved.

___ Does your sensor have an IP address?

After your sensor has been operating for 30 seconds, press the *Menu* button until you see the "IP address" screen. If the address listed is 0.0.0.0, your sensor is not receiving an address from a Dynamic Host Configuration Protocol (DHCP) server. Several network problems may cause this condition, but most problems are resolved by obtaining a static IP address from your network administrator. Ask your network administrator for a static IP address, gateway, and netmask. If you don't understand what these are, don't worry your network admin will understand. Include the MAC address listed under the *MAC Address* menu item in your request. Once you receive the static IP, gateway, and netmask from your administrator, follow the instructions in this document under **Advanced***, Static IP Setup,* to set the IP address for your sensor.

___ Does you data send status read "Data sent at xx:xx UTC"?

To allow you to access your data on the Internet, your sensor uploads data to our servers. To check whether your sensor is uploading data, press *Menu* once from the data display. If you see a message "No server contact", your sensor is not communicating properly with our servers. For normal data transfer, this screen will read "Data sent at HH:MM UTC". (The time is Universal Time Coordinated.) If you see this screen, your sensor is working properly. If not, you may have a problem with your network setup. Try setting a static IP address, gateway, and netmask. Follow the instructions in this document under **Advanced***, Static IP Setup.* If this does not resolve your problem, contact airCarbon and explain the steps that you have taken to

resolve your issue.

If you can check all the previous line items, your sensor is working properly. You should be able to view data on aircarbon.com. If you are having problems with the aircarbon.com website, contact support at http://aircarbon.com/contact with your problems.

Advanced

Static IP address setup

Before assigning static settings to your WebLink Sensor, you must request a static IP, netmask, and gateway from you network administrator. When you make your request, include the sensor MAC address. Your network administrator will need this information. The sensor's MAC address is available in the sensor's menu. Press *Menu* until you find it. Once you obtain a static IP from your network administrator, setup your sensor as follows:

Disconnect the sensor from your network. Unplug the power cable from the sensor. Then, hold the *Menu* button while plugging in the power cable. You should now see the *Static IP/DHCP* screen. For each of the settings (IP, gateway, and net mask), use the +/- buttons to select each value and the menu button to navigate to subsequent values. (To return the sensor to DHCP mode, set the IP to 0.0.0.0.) When finished, reconnect the sensor to your network and reboot the sensor by unplugging and plugging it back in. It should now use the new static settings. To confirm the settings, press the menu button until you see the IP screen and verify that it is the static IP that you previously set.

Wireless setup

It is easy to make our sensors wireless with the use of a commercially available wireless Ethernet bridge pair. A wireless Ethernet bridge acts as a virtual Ethernet wire between two points, allowing you to create a network connection in a location that does not have wired network access. We recommend either a pair of ASUS WL-330gE_Ms or the Vudu Wireless Kit--which although designed for Vudu functions perfectly with our sensors. (Be aware that the Vudu kit only comes with one AC/DC power adapter, the other bridge module much be connected to a USB port on your computer. If your router is not near your computer—and therefore your USB ports—you should choose the WL-330s.)

To install, connect one wireless bridge module to your network and the other wireless bridge module to your WebLink Sensor using Ethernet cables. Be sure to connect each wireless bridge module to a power source. For long distances, it may be necessary to mount the wireless modules as high as possible. (The WL-330s can be used up to 1200 ft away in open spaces and up to 130 ft away indoors.) The "Wireless" light on the bridge module will light when a successful link is established between the two modules. The figure below shows a Vudu wireless module connected to an WebLink Sensor, the other module (not shown) is connected to a router.

WebLink Sensor with Vudu Wireless Kit Ethernet module.

Specifications

All sensors

- ⚑ Network connection   10/100 Mbps Ethernet (RJ-45)
- ⚑ Measurement interval   15 seconds
- ⚑ Current consumption   500 mA @ 9 VDC (AC adapter included)
- ⚑ Humidity operating range   0 − 95% (non-condensing)
- ⚑ User configurable minimum and maximum audible alarms

Carbon dioxide (AC-418CHT)

- ⚑ Measurement range   0 – 5000 ppm
- ⚑ Accuracy   ± 30 ppm ± 5% of measurement value
- ⚑ Repeatability   ± 20 ppm ± 1% of measurement value
- ⚑ Precision   1 ppm
- ⚑ Operating temperature   0 to 50 ºC
- ⚑ Pressure compensation   Altitude or average pressure is set by user at installation.
- ⚑ Calibration   User must calibrate CO_2 monthly for best results using outdoor air or calibration gas. See the *Carbon Dioxide Calibration* guide at aircarbon.com for more information.

Relative humidity *(AC-418CHT, AC-419HT)*

- ⅄ Measurement range   0 to 95 % relative humidity
- ⅄ Accuracy   ± 5 % relative humidity
- ⅄ Precision   0.1 % relative humidity
- ⅄ Operating temperature   -40 to 50 ℃
- ⅄ Response Time   30 minutes

Temperature *(AC-418CHT, AC-419HT, AC-420T)*

- ⅄ Measurement range   -40 to 50 ℃ (-40 to 120 ℉)
- ⅄ Accuracy   ± 1 ℃
- ⅄ Precision   0.1 ℃

Warranty

All airCarbon WebLink Sensor products come with a warranty against defect or failure for a period of one year from the date of purchase (with limitations below). This warranty covers replacement or repair (to be determined soley by airCarbon) of the product.

Limitations

The warranty of products damaged due to customer negligence (including but not limited to the use of sensors in environmental conditions outside the specified ranges) will not be honored. Carbon dioxide (CO_2) sensor calibration accuracy is determined both by the user's frequency and method of calibration and by proper operation of the sensor. For this reason, problems with CO_2 sensor operation can be the result of either (a)customer negligence or (b)faulty sensors. If a customer believes that his/her CO_2 sensor is not functioning properly, he/she may send the sensor to airCarbon for evaluation. airCarbon reserves the sole right to determine if the sensor is functioning properly. In the event that the sensor is working properly, the customer will be charged a reasonable amount for the evaluation and for shipping of the sensor back to the customer. In the event that airCarbon finds that the CO_2 sensor is not operating properly, the product will be repaired or replaced accordingly.

Limitation of Liability

Sensor data is provided (both locally from the Sensor and through the Access) to any User for informational use only. A Sensor shall not be used in situations where the safety of persons or property depends upon the proper operation and/or accuracy of the Sensor. airCarbon shall not be liable for any damage to a User, a User's property, or others regarding

the use of the Sensor and/or the Sensor's data. The User agrees to defend, indemnify and hold harmless airCarbon against liabilities arising out of any injury to person or property caused by any products (including but not limited to WebLink Sensors) and/or services sold in connection with airCarbon.