Getting to know your AirU sensor
Data collection with WiFi

Thank you for purchasing an AirU sensor. This guide will walk you through the necessary steps to collect pollution data and store it on your sensor's microSD card. The complete setup of your sensor should take less than 30 minutes.

If you have questions about the process you can reach out to our team at contact@tetradsensors.com. Please provide your name, phone number, and a window of time we may call you. We will attempt to get in touch with you within 24 hours.

1. What's in the box

Your box should contain the following items:

- AirU sensor. The PM sensor is attached to the front of the housing. The computer board (red) sits on plastic pins on the back portion of the housing.
- Black power cord.
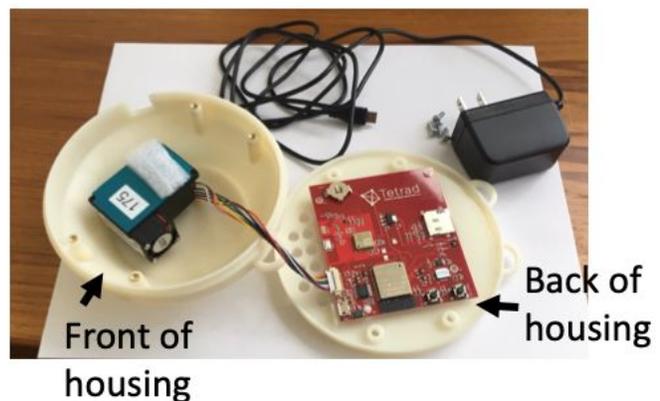- 4 screws for the housing.

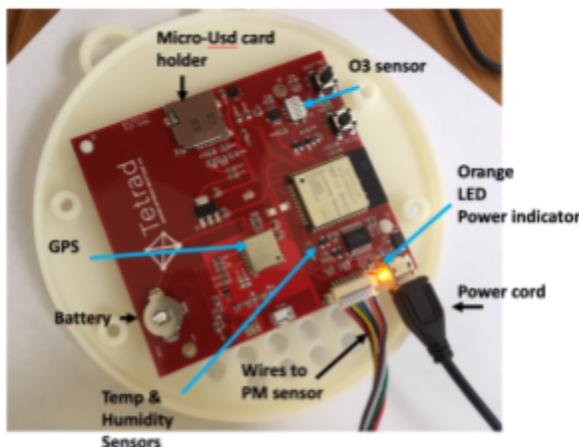Figure 1. AirU sensor components.

Figure 2. AirU's circuit board and integrated sensors.

Inside of the AirU sensor housing is a small red computer board that has all the electronics necessary to power and run the attached particulate matter sensor.

The image to the left shows some of the key components including the microSD card holder, the port for the power, the battery, and the orange power indicator light.

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2. Connecting to WiFi

1. Plug in the device. Please use the supplied micro-USB power adapter. If you are using your own power adapter you must ensure that it can provide at least 500mA of current.
2. On your smartphone or laptop, connect to the WIFI network named "AirU-xxxx" where "xxxx" corresponds to the last 4 characters of the device mac address.

3. Open a web browser and type the following web address into the address bar: http://192.168.4.1 You'll be presented with the following screen, with the available networks listed:
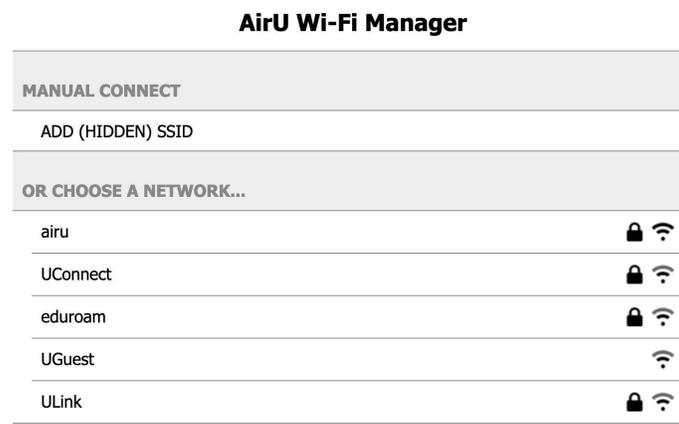
If the page does not load please ensure your WIFI is connected to "AirU-xxxx" and clear your cache or try a different browser.

4. Look for your home WIFI network under the heading titled "Or Choose a Network..." and click on it. If you do not see your network present, please wait at most 30 seconds for it to appear.

   If you still do not see your WIFI network appear after 30 seconds, there may be several reasons. The AirU can only connect to 2.4GHz networks (not 5GHz). If your network is only 5GHz, you'll have to find another network to connect the AirU to. You may also need to check that the AirU is in range of the router. If you are attempting to connect to an iPhone hotspot, please see the applicable note in the Troubleshooting section.

5. After you click on the desired WIFI network you will be prompted to enter your WIFI password. If you are connecting to an open, public network with no password, do not type anything into the password field, or it will not connect. After you enter the password, you may check that it is correct by checking the "Show Password" box, and when you are confident, click "Join".
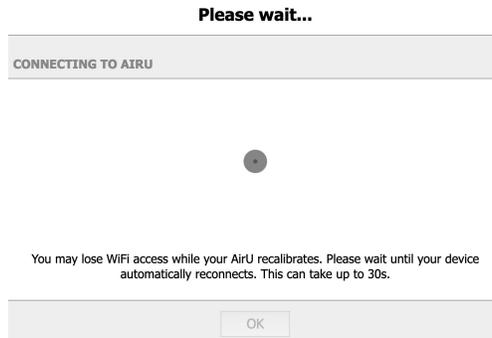

6. A page will appear informing you to wait. This page can give mixed results, so watch your AirU while this screen is active. If you DO NOT see a red LED, it means the AirU has internet access. After connecting to your WIFI network, you may now change the WIFI network on your smartphone or laptop back to your desired network. Please note that you will not have internet access while you are connected to the "AirU-xxxx" network.

   NOTE: If the red LED on the AirU is still solid or sporadically turning on and off, please disconnect your phone or laptop from the "AirU-xxx" network, then unplug the AirU and plug it back in. Then wait up to 1 minute for the red LED on the AirU to turn off. If the red LED does not turn off, please repeat the process from Step 2 of this section.

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Please wait...

CONNECTING TO AIRU

You may lose WiFi access while your AirU recalibrates. Please wait until your device automatically reconnects. This can take up to 30s.

OK

WiFi Troubleshooting

Connecting to WIFI Networks with a Captive Portal

A captive portal is the HTML popup you see on your phone or laptop when you connect to a public network (such as in a hotel, airport, or coffee shop) that will hold you behind a firewall and revoke your internet access until you click "Accept" and possibly add additional information. The AirU devices will not work on any network that uses a captive portal, unless you specifically communicate with the IT staff hosting that network and have them manually add the AirU MAC address, and any other relevant information they need.

Connecting to an iPhone Hotspot:

If you are attempting to connect to an iPhone hotspot, please note that the default WIFI network name is Person's iPhone. The apostrophe is not parsable by the AirU, and you will not be able to connect. You will need to rename the network by navigating to Settings->General->About->Name and remove the apostrophe from the name. As an example I changed my iPhone name from Tom's iPhone to Toms iPhone. When renaming, please only use alphanumeric characters (0-9,a-z,A-Z) and spaces. Also do not exceed 32 characters.

Understanding the AirU LEDs

Blue: This LED will be illuminated when the AirU GPS does not have an updated time stamp. Please note that this LED does not determine if the GPS can currently communicate with the satellites or if the GPS has a valid GPS location. The LED is ONLY used to determine if the GPS has a valid timestamp. For example, if the AirU has a coin cell battery inserted while the GPS has previously communicated with the satellites then

the current timestamp will be stored and updated every millisecond, even while the AirU does not have power (the timestamp update circuity on the GPS is powered by the coin cell battery).

RED: This LED will be illuminated when the AirU is not currently connected to the Internet. This LED can be visually determine if there is a connection issue with your AirU.

3. Preparing your sensor for measurements

Once you ensure that your sensor is working and you have confirmed that you can collect data on your microSD card, you are ready to collect data.

Step 1. Insert the power cable into the sensor.

Step 2. Place the top of the housing on the bottom of the housing as shown in Figure 3.

Step 3. Place the screws in the back of the housing and gently tighten them.

Figure 3. Closed AirU sensor.

4. Finding a site for your sensor

Now find a suitable location for your sensor. We recommend placing the sensor at breathing height or above. You can hang your sensor (Figure 4), or you can place your sensor on a flat surface, wide side down (Figure 3). If you place it on a flat surface, you might want to strap it down. It weighs ¼ lb and can easily be knocked over. We recommend a sheltered location, like under an eave for the AirU sensor. Its housing is not waterproof.

Figure 4. Example of AirU on a hanging mount.

5. Battery-Powered Operation

If you want to power your AirU using a battery, there are several things to keep in mind.

The output of your battery must be 5V (no more, no less), and capable of delivering at least 200mA of current. The AirU consumes 100mA on average. This number can be used to determine how long your AirU will last when powered by a given battery. For example, if we use a 2200mA-hour battery, we can expect the AirU to last:

$2200 mAh / 100 mA = 22\ hours$

6.   Troubleshooting

Common problems and solutions:

Problem: Your microSD card contains no data.

o   *Solution*: Check to ensure that your microSD card is fully inserted into the microSD holder on the board.

Problem: Your microSD card is unreadable.

o   *Solution:* Your microSD card has been corrupted. Get a new microSD card. Reminder: removing your microSD card while the board is powered on can corrupt your card. The biggest problem we have experienced is corrupt microSD cards. We recommend checking the card before deploying it (as described in Section 2), and **only remove the microSD card after you have powered off your sensor.**

Problem: The PM values in your sensor continually read -1, or the PM values in your sensor read zero then 5000, then zero again.

o   *Solution:* The wires connecting your PM sensor to your board are loose. Ensure that the connectors on the 6" wire that connects the PM sensor to the red board are fully inserted into the ports on the board and the sensor. If a wire has come has popped out of the connectors, contact us for a replacement wire.