Aeroqual AQY 1
Installation Guide

The South Coast Air Quality Management District's (South Coast AQMD) Air Quality Sensor Performance Evaluation Center (AQ-SPEC) will be assisting in the deployment of low-cost air monitoring sensors in California communities in partnership with their community leaders. This deployment will allow South Coast AQMD staff, researchers, and community members to explore the potential for low-cost sensors and networks to provide locally relevant air quality information.

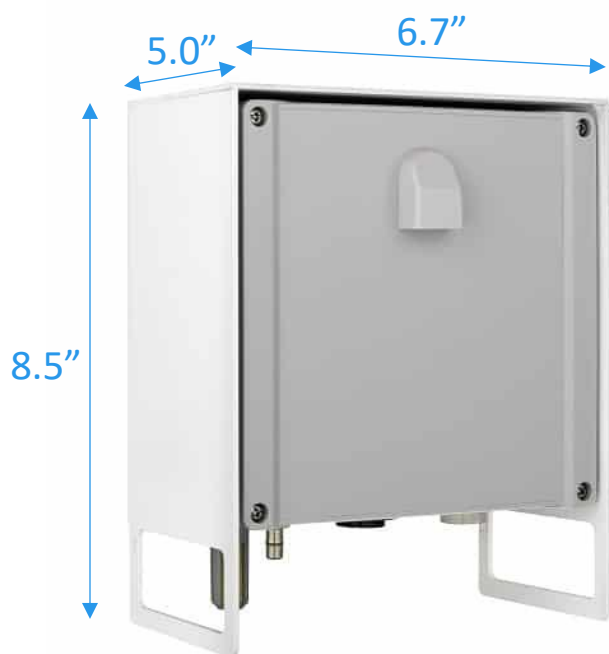
http://www.aqmd.gov/aq-spec

Figure 1: Aeroqual AQY 1 dimensions

Monitor Information

Measures:
   Particulate Matter ($PM_{2.5}$)
   Nitrogen Dioxide (NO_2)
   Ozone (O_3)
   Temperature (T)
   Relative Humidity (RH)

Dimensions:
   8.5"H x 6.7"W x 5.0"D

Weatherproof

Cellular Connectivity

Each AQY 1 Includes:

Aeroqual AQY 1 Monitor

Power Adapter

Power Extension Cord

Mounting Bracket/Bolts
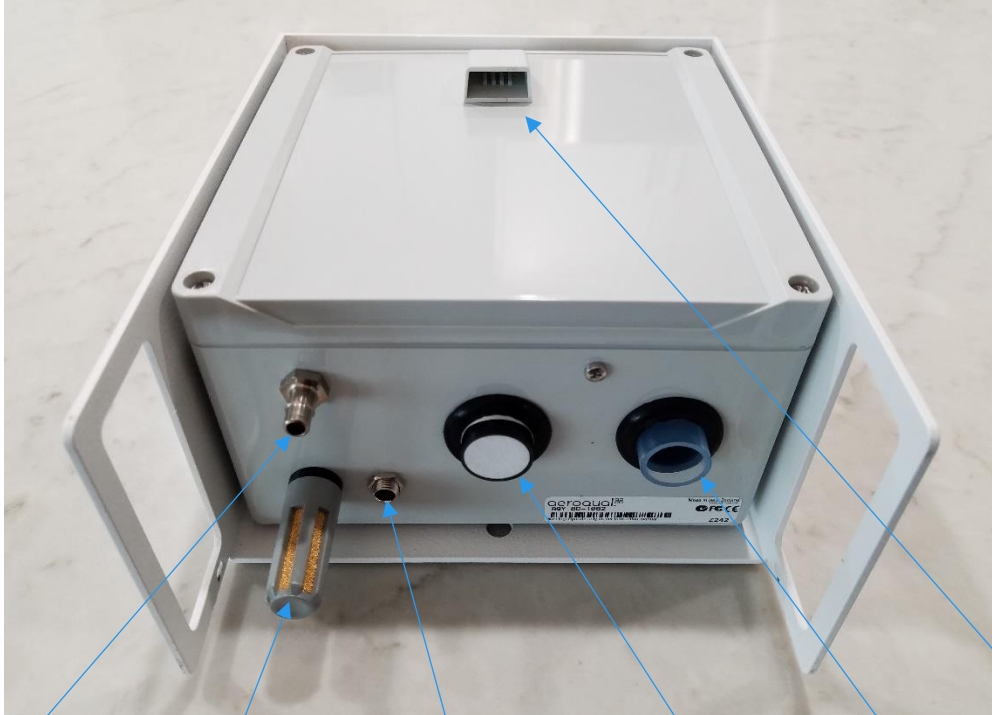
Figure 2: Aeroqual AQY 1 parts

Monitor Components

PM$_{2.5}$ Sensor   T/RH Probe   Power Input   NO$_2$ Sensor   O$_3$ Sensor   Vent
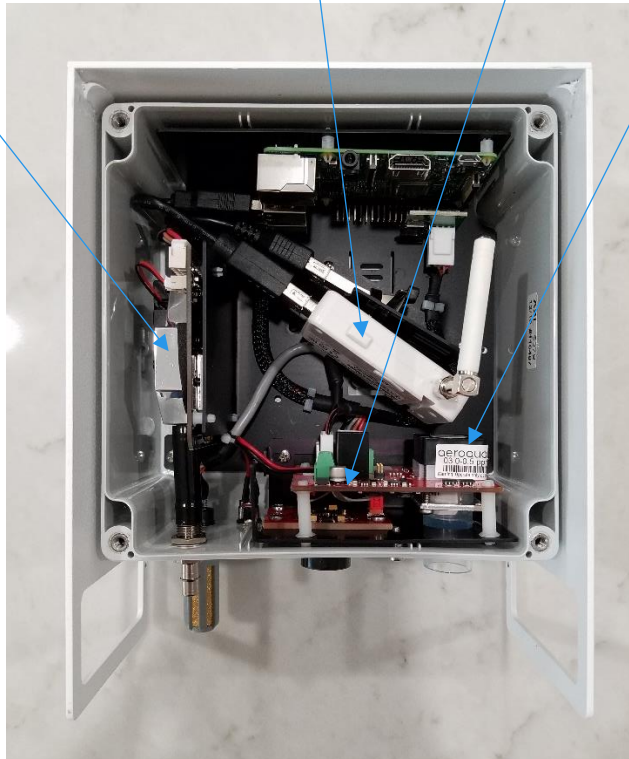
Cellular Modem

Figure 4:
Aeroqual AQY 1
internal components

There are 4 steps to complete the installation of an AQY monitor.

1. Finding a Location to Install

There are a few considerations to keep in mind while deciding where to deploy an air quality monitor. An ideal location should have some or all of the following guidelines:

- A location which allows for open airflow around the monitor with the following characteristics:
  - Edge of a rooftop or awning, vertical post/pole, top of a fenceline, or similar
  - Ideal height for installation shall be from 5ft to 10ft
  - Not a location where the monitor is too close to the ground or closed off by walls
- Away from local sources of pollution (e.g., dust or fumes), some examples are A/C units, ventilation ducts, or barbecues
- Distant from any major obstructions, such as tall trees or overhead covers
- Locations that are often shady (e.g., a north-facing location) work well to minimize the monitor's exposure to the higher temperatures likely to occur in direct sunlight
- Near a power outlet for easy connection with minimal power cord length

2. Installation and Deployment

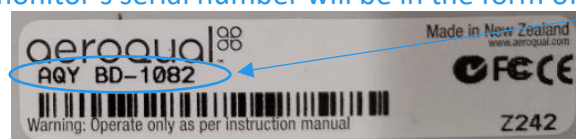Before installing your monitor, it is important to note the following:

- The AQY monitor does not have a power switch, therefore it powers on once the power adapter is plugged in
- Do not unplug the power adapter from the monitor during its boot-up process (first minute after powering on) as this can cause programming/settings damage
- Avoid touching the NO_2 sensor's white filter/film as it is sensitive to touch and can easily tear

- Avoid bumping or shaking the monitor as this can loosen internal components
- While mounting the monitor, be very cautious when attaching it to the mounting bracket's protruding bolts as it can slide off and drop to the floor if improperly placed on the bolts

Installation:

- Prior to mounting your monitor in the chosen location, note down the AQY serial number found on the sticker on the bottom of the monitor to forward to AQ-SPEC
  - The AQY monitor's serial number will be in the form of "AQY BD-####"

- There are multiple ways to mount the AQY, depending on where you'll be mounting it:
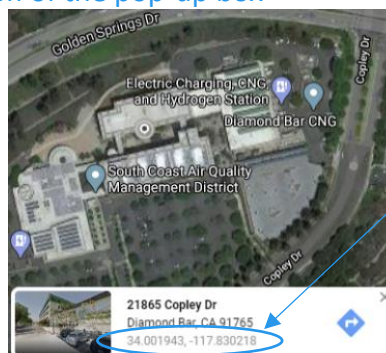 - For mounting the monitor to poles or fencing by use of hose clamps or zip ties, tightly attach the mounting bracket to the back of the monitor, in either a horizontal or vertical orientation, by attaching the provided bolts to the mounting bracket and leaving them protruding out for the monitor holes to sit on
  - If mounting the monitor to a wall or edge of a rooftop, use screws to attach the mounting bracket to the surface, then attach the monitor to the mounting bracket (be very careful as it can be difficult to get a tight fit when placing the monitor onto the mounting bracket bolts)

- To ensure a secure and lasting attachment, mount the monitor (sensor inlets facing down) using either cable ties/hose clamps (e.g., for a railing or pole) or screws (e.g., for a rooftop edge or wall)
- Plug the power adapter into the power input socket at the bottom of the monitor
  - If the power outlet being plugged into is located outdoors, use a weatherproof receptacle cover to protect the outlet from moisture
  - Use zip ties to secure the power cable to ensure no tripping hazards exist

- The monitor connects and transmits data via a cellular connection and will automatically connect after powering on
- Collect installation information for records
  - Note the date/time of installation
  - Take a photo of the installed monitor and its surroundings
  - Using Google Maps on a smartphone or computer (either via the Google Maps mobile app or visiting maps.google.com), tap and hold the screen on the monitor's exact location on the map and record the coordinates (ex. 34.001943, -117.830218) shown at the bottom of the pop-up box

3. Data Connectivity and Transmittance

Once the AQY 1 is powered on, it will begin its boot-up process and start searching for a cellular signal to connect to the Aeroqual Data Management Platform (this can take up to several minutes, depending on cellular signal strength).

To ensure the monitor has connected to the Aeroqual Data Management Platform, contact AQ-SPEC (contact information available on page 6) to confirm the monitor has connected and is reporting data. You will also need to provide the monitor's serial number and coordinates to update your monitor's accurate location on the database.

4. Installation Survey and Log Notes Form

After completing all the previous steps and contacting AQ-SPEC to ensure the monitor is online, please complete the following survey:

- Aeroqual AQY 1 Monitor Installation Survey
  (https://bit.ly/2xZiRGt)
  This survey is to be filled out just once and covers the installation/deployment process and collects information on the type of environment and surroundings the monitor was deployed in.

During the monitor's entire deployment period, community members are encouraged to submit information about activities and ambient conditions that may impact the data collected by the monitor. This information allows community scientists to better analyze and interpret local air quality conditions and note any atypical conditions that may impact the monitor. A Log Notes Form shall be used to record any activities, observations, concerns, or general notes about a monitor and its surroundings:

- Aeroqual AQY 1 Log Notes Form
  (https://bit.ly/2T1A0XA)
  This form is intended for ongoing and repeated use to collect information about the date/time of any notable observations regarding the ambient air sampled by the monitor or any events you believe may have caused spikes in the readings. This form also gives you the opportunity to explain any trends you observe.

AQ-SPEC Technical Support
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