About Our Technology

An Internet of Things (IOT) device, PurpleAir sensors are part of an exciting new generation of connected smart sensors

A PurpleAir sensor is an "Internet of things" (IOT) air quality sensor or particulate sensor consisting of the following elements:

PMS5003 Laser Particle Counter:

PurpleAir uses PMS5003 laser particle counters. These sensors count suspended particles in sizes of 0.3, 0.5, 1.0, 2.5, 5.0 and 10um. These particle counts are processed by the sensor using a complex algorithm to calculate the PM1.0, PM2.5 and PM10 mass in ug/m3. PMS5003 sensors come factory calibrated.
Before deploying any devices, we verify that they are giving out readings that are consistent from sensor to sensor during tests in a smoke chamber.
So far, all sensors we tested have produced consistent output.

ESP8266 and Arduino:

Purple Air sensors use an ESP8266 chip to talk to the particle counter and provide all functionality, including connecting to a WiFi network and uploading data to the cloud. This ESP8266 chip runs code developed using Arduino (http://www.arduino.cc/). Purple Air firmware has remote update features meaning we can modify the software and the device will download the new version and update itself. Each device checks for updates from time to time.

Thingspeak.com and HighCharts.com:

Thingspeak.com (http://www.thingspeak.com/) provides the cloud storage for the data and allows us to to access it later for graphs. These graphs use HighCharts.com (http://www.highcharts.com/).

Google:

Using services from Google makes for a robust, reliable and secure system.
Google maps provides the map interface.
Google scripting provides the processing power to place the sensors on the map and create the graphs and other elements to display the data.

Other Sensors:

PurpleAir sensors include temperature and humidity sensors. Where these are present, there will be graphs for these values. The temperature values may be elevated due to the case and other factors that do not provide ideal temperature sensing. These values are provided as is and are just for interest.
Purple Air sensors may include other detectors in the future like Ozone or other gases.

Other Hardware:

PurpleAir sensors are powered by a standard USB power adapter.

(https://www.wunderground.com/) (http://www.ccair.org) (https://cleanaircarolina.org/) (http://www.ezsbc.com/)

Tested By

AQ-SPEC Air Quality Sensor Performance Evaluation Center

(http://www.aqmd.gov/aq-spec/product/purpleair-pa-ii)

Our Locations

Visit mylocation.purpleair.com (http://mylocation.purpleair.com) - or - goto a location by using the format "some_location.purpleair.com" where "some_location" is a place name with underscores instead of spaces - for example salt_lake.purpleair.com (http://salt_lake.purpleair.com).