

# Gravity: PM2.5 Air Quality Sensor

## INTRODUCTION

As the most basic part of life, air is attracting more and more attention, for example, the most common PM2.5, PM1.0, PM10, etc. Keeping an eye on the quality of the air we breath is becoming quite important.

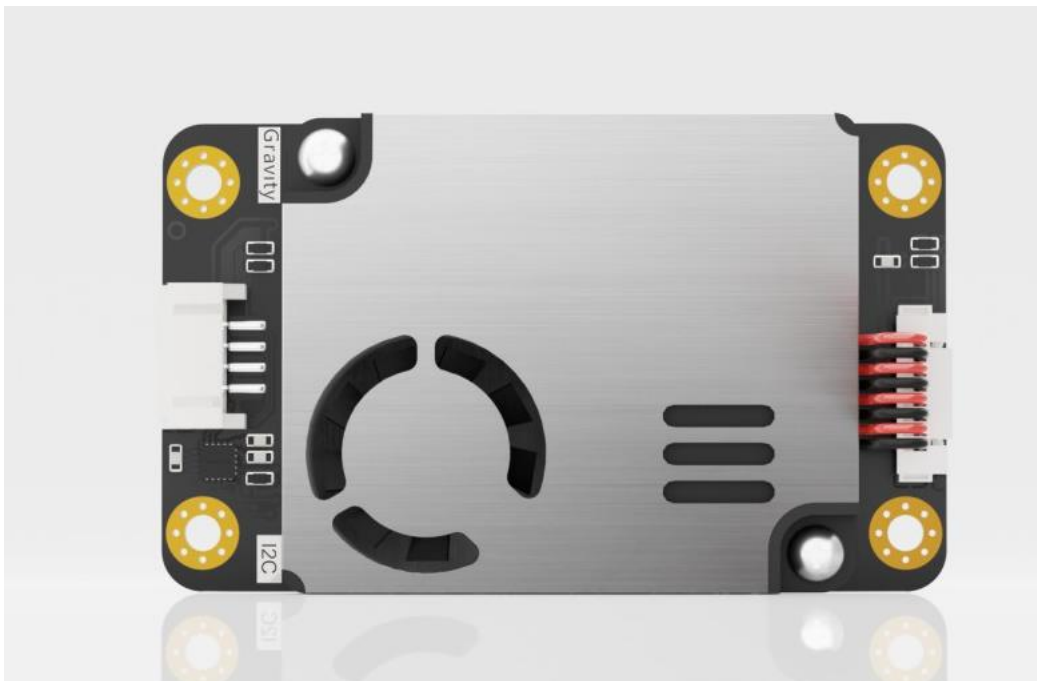
**DFRobot brings you this Air Quality Sensor that can measure particulate matter like PM2.5, PM1.0, PM10.**

With easy-to-use Gravity interface, the air quality sensor works well with most main-controllers. And we provide you with relevant sample codes to help you quickly build up air quality monitoring projects.

Based on the principle of laser scattering, the PM2.5 air quality sensor employs a digital universal particle sensor that can continuously collect and calculate the number of suspended particles of different sizes in the air per unit volume, which is particle concentration distribution, and then convert to concentration and output via I2C interface.

The sensor can be embedded in various instruments and meters or environmental improvement equipment related to the concentration of suspended particulate matter in the air to provide timely and accurate concentration data.

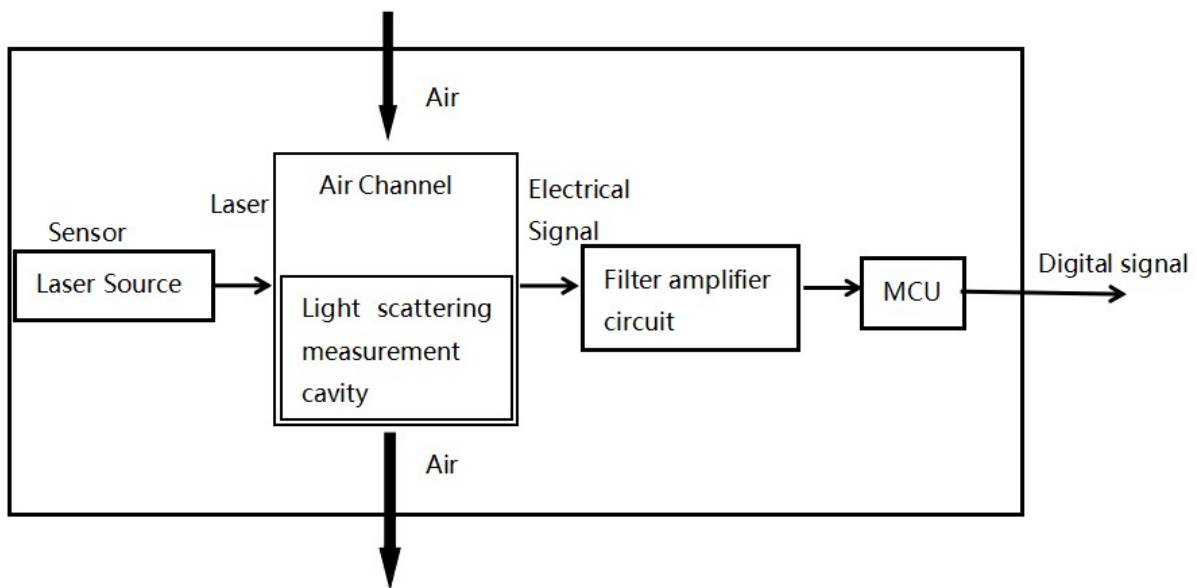
It is typically suitable for smoking rooms, kitchens, hot springs, bathrooms and other environments.



## How does the sensor work?

This sensor adopts the principle of laser scattering, that is, to make the laser irradiate the suspended particles in the air to produce scattering, and at the same time collect the scattered light at a certain

angle, and obtain the curve of the intensity of the scattered light with time. Furthermore, the microprocessor, based on the MIE theory algorithm, obtains the equivalent particle size of the particles and the number of particles of different particle sizes per unit volume.



## FEATURES

- Laser scattering principle, accurate measurement
- Zero false alarm rate
- Real-time response and support continuous acquisition
- Minimum recognizable particle size  $0.3\mu\text{m}$
- Six-sided all-round shielding, stronger anti-interference
- Ultra-thin design, only 12mm, suitable for portable devices

## APPLICATIONS

- Environmental improvement equipment

## SPECIFICATION

Working Voltage: 3.3V~5V

Maximum Working Current: 100mA

Standby Current:  $\leq 2\text{mA}$

Data Interface Level:  $L < 0.8\text{V}$ ,  $H > 2.7\text{V}$ , maximum voltage level 3.3V

Particle Measurement Range: 0.3 ~ 1.0 $\mu$ m; 1.0 ~ 2.5 $\mu$ m; 2.5 ~ 10 $\mu$ m

Particle Counting Efficiency: 50% @ 0.3 $\mu$ m 98% @  $\geq$ 0.5 $\mu$ m

Effective Range of Particle Mass Concentration (PM2.5 standard value): 0~500 $\mu$ g/m<sup>3</sup>

Maximum Range of Particle Mass Concentration (PM2.5 standard value):  $\geq$ 1000 $\mu$ g/m<sup>3</sup>

Resolution of Particle Mass Concentration: 1 $\mu$ g/m<sup>3</sup>

Consistency of Particle Mass Concentration (PM2.5 standard value): 1.  $\pm$  10% @100 ~ 500  $\mu$ g/m<sup>3</sup>; 2.  $\pm$ 10  $\mu$ g/m<sup>3</sup>@0 ~ 100  $\mu$ g/m<sup>3</sup>

Standard Volume: 0.1 L

Single Response Time: < 1s

Comprehensive Response Time:  $\leq$ 10s

Working Temperature Range: -10~+60°C

Working Humidity Range: 0~95%% (non-condensing)

Mean Time Between Failures:  $\geq$ 5 years

Product Size: 67 mm \* 40 mm \* 14 mm / 2.64\* 1.57 \* 0.55 inches

