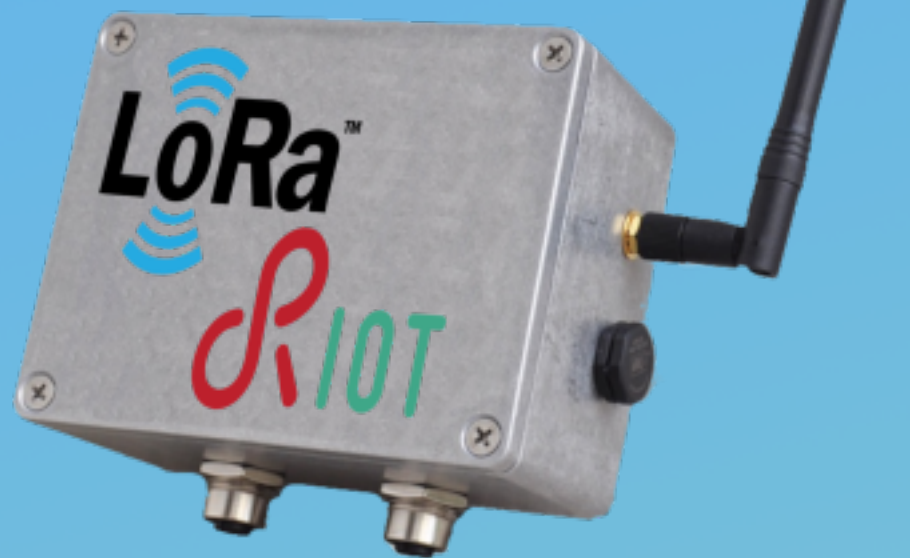# Particulate matter sensor

Low cost | Easy to install | Open source

The case containing the sensors and the electronic board

The aim of this project is to develop a particulate matter sensor. The fist objective is to put it on the Tour Perret in Grenoble. Then, if the experience is sucessful, this sensor could be installed anywhere with little to no infrastructure. For reporting data, it leverages the LoRa technology to make long-distance communications (from 5 to 20km). The low consumption of our sensor makes it able to power itself using either a battery or a solar panel.
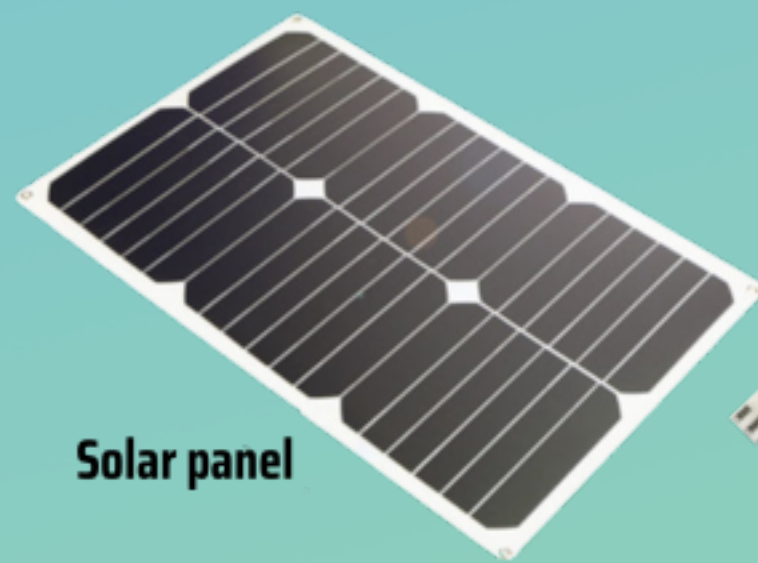
Solar panel

Batteries

The Project is free and open source, meaning that our work is publicly published with the source code, a manual and the list of components. It allows anyone in the world to build, use and modify our work to measure particulate matter or environmental metrics. It could give the community a powerful tool to contribute to research.

Particulate matter is made up of tiny pieces of solids and liquids that float in the air. In the last few years, studies have shown the impact of their inhalation on health. In Grenoble they could be responsible for between 3 and 7% of deaths hence the importance of measuring and studying the concentrations of these particles in as many places as possible.

Examples of the Grafana dashboard

Grafana

The particulate matter sensor sends all its data to a server. This server ensures that all the data is collected. It also stores it in a database. An interface made with Grafana displays statistics and graphs about the data collected. This interface also enables the user to reconfigure the sensor station to set what and when measurements should be sent.

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