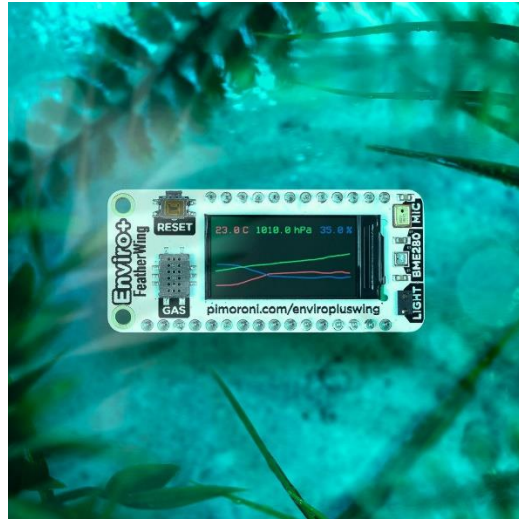


# Enviro+ FeatherWing

PIM502



Care about air with Enviro+ FeatherWing. It's packed full of environmental sensors that'll get you started in the world of citizen science. Monitor weather, light level, noise pollution, and air quality, in your local area and contribute your data to better understand trends in air pollution.

**Note: you'll need a Feather board to go with this FeatherWing. We'd recommend the Feather M4 Express or Feather nRF52840 Express.**

## Tiny, feature-packed

Enviro+ FeatherWing is no larger than a couple of pound coins side-by-side, but it's absolutely jam-packed with sensors. It has all the great features of the larger Enviro+ for Raspberry Pi—a weather sensor, light sensor, microphone, gas and particulate sensing\*, and a gorgeous, colour LCD—but it's built for Adafruit's range of low-power Feather boards that run CircuitPython.

Measure temperature, pressure, and humidity with the BME280 weather sensor; measure light level with the LTR-559 light and proximity sensor; detect a range of pollutant gases with the MICS6814 analog gas sensor; measure ambient noise level with the analog MEMS microphone. Connect up a PMS5003 particulate matter (PM) sensor (\***available separately**) and you can measure air quality too!

## Enviro+ FeatherWing features

- BME280 temperature, pressure, humidity sensor ([datasheet](#))
- LTR-559 light and proximity sensor ([datasheet](#))
- MICS6814 analog gas sensor ([datasheet](#))
- ADS1015 analog to digital converter (ADC) ([datasheet](#))
- MEMS microphone ([datasheet](#))
- 0.96" colour LCD (160x80)
- Connector for **particulate matter (PM) sensor** (available separately)
- FeatherWing format board
- Includes two 1x16 male headers
- **Requires soldering**
- **CircuitPython library**
- **Schematic**
- Dimensions: 51x23x6.5mm (without headers attached)

## Care about air!

Enviro+ FeatherWing is the smaller sibling to the Enviro+ for Raspberry Pi, developed in collaboration with the University of Sheffield, with the aim of letting you contribute real-time air quality data from your local area to open data projects like **Luftdaten**.

The alarming drop in our air quality is something that's really important to understand. Devices like Enviro+ FeatherWing allow fine-grained, detailed datasets that let us see shifts in air quality through time and across different areas of cities. The more devices that contribute data, the better quality the dataset becomes.

Particulate matter (PM) is made up of tiny particles that are a mix of sizes and types, like dust, pollen, mould spores, smoke particles, organic particles and metal ions, and more. Particulates are much of what we think of as air pollution. They can be measured, in size and quantity, by particulate matter sensors like the **PMS5003** that you can connect to Enviro+ FeatherWing.

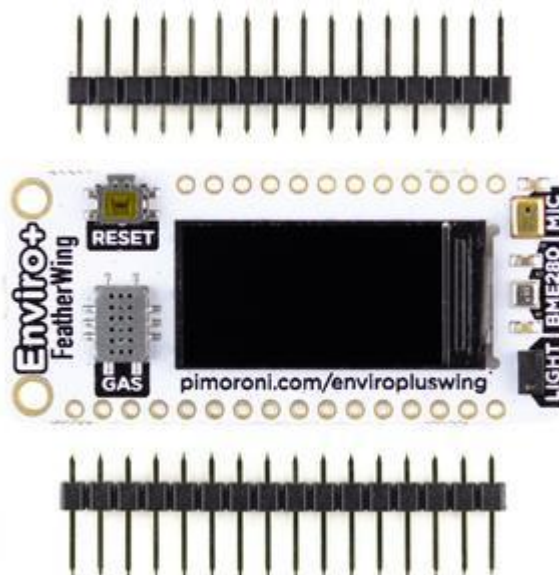
The analog gas sensor can be used to make **qualitative** measurements of changes in gas concentrations, so you can tell broadly if the three groups of gases are increasing or decreasing in abundance. Without laboratory conditions or calibration, you won't be able to say "*the concentration of carbon monoxide is n parts per million*", for example.

Temperature, air pressure and humidity can all affect particulate levels (and the gas sensor readings) too, so the BME280 sensor on Enviro+ FeatherWing is really important to understanding the other data that it outputs.

## Software

We've built a **CircuitPython library** just for Enviro+ FeatherWing, with support for all the bits and bobs on it. We've also put together thorough **examples** and **documentation** to help you to understand how to use it, and to give you some ideas on how to take it further.

Have a good read through the **documentation**. It walks through everything you'll need in terms of libraries, and tells you how to use all of the various functions of the library.



<https://shop.pimoroni.com/products/enviro-plus-featherwing/11-4-20>