

PM Sensor

A device designed to monitor air pollution levels and safeguard against harmful particulate matter (PM) present in the air. This device, belonging to the PRO sensor series, includes Aranet Sub-GHz ISM band radio which wirelessly transmits sensor measurements to the Aranet PRO base station.



Product numbers

| Product number | Radio band | To be used in |
|----------------|------------|---|
| TDSPPM02 | EU868 | European Union |
| TDSPPMU2 | US920 | United States of America, Canada, South America, Australia, New Zealand |
| TDSPPMU2 | AS923 | BRN, KHM, HKG, IDN, LAO, TWN, THA, VNM, MYS, SGP |
| Not available | JP923 | Japan |
| Not available | KR923 | South Korea |

Particulate matter concentration measurement performance

| | PM1.0 | PM2.5 | PM10 |
|--|---------------------------------|---------------------------------|---------------------------------|
| Range | 0–1000 $\mu\text{g}/\text{m}^3$ | 0–1000 $\mu\text{g}/\text{m}^3$ | 0–1000 $\mu\text{g}/\text{m}^3$ |
| Resolution | 1 $\mu\text{g}/\text{m}^3$ | 1 $\mu\text{g}/\text{m}^3$ | 1 $\mu\text{g}/\text{m}^3$ |
| Accuracy (up to 100 $\mu\text{g}/\text{m}^3$) | $\pm 10 \mu\text{g}/\text{m}^3$ | $\pm 10 \mu\text{g}/\text{m}^3$ | $\pm 25 \mu\text{g}/\text{m}^3$ |
| Accuracy (100–1000 $\mu\text{g}/\text{m}^3$) | $\pm 10 \%$ | $\pm 10 \%$ | $\pm 25 \%$ |
| Maximum long-term drift | $\pm 1.25 \%$ /year | $\pm 1.25 \%$ /year | $\pm 1.25 \%$ /year |

- The concentration metrics provided for PM1.0, PM2.5, and PM10 indicate particle concentration with overlapping size ranges: 0.3–1.0 μm , 0.3–2.5 μm , and 0.3–10 μm , respectively.

General specifications

| | | |
|-----------------------------------|-------------------------------|-------------------|
| Ingress protection rating | IP42 | |
| Operating temperature range | -10–60 °C | 14–140 °F |
| Operating relative humidity range | 0–95 % | |
| Dimensions | 104×67×37 mm | 4.10×2.64×1.46 in |
| Weight (excl. wall mount) | 116 g | 4.1 oz |
| Packaging includes | Power supply unit, wall mount | |

Power supply specifications

| | | |
|-------------------|--------------------------------------|--|
| Power supply | External 12–24 VDC power supply unit | |
| Power consumption | 0.5 W | |

LED mode description

| LED mode | Air quality index | Category |
|----------|-------------------|--------------------------------|
| Green | 0–50 | Good |
| Yellow | 51–100 | Moderate |
| Orange | 101–150 | Unhealthy for sensitive groups |
| Red | 151–200 | Unhealthy |
| Purple | 201–300 | Very unhealthy |
| Flashing | >301 | Hazardous |

- The calculation of the air quality index and the corresponding implementation of LED modes were guided by the document titled: *U.S. Environmental Protection Agency, “Technical Assistance Document for the Reporting of Daily Air Quality” (2018)*.

Aranet radio parameters

| | | |
|----------------------------|-------------------|--------|
| Line of sight range | 3 km | 1.9 mi |
| Transmitter power | 14 dBm | 25 mW |
| Data transmission interval | 1, 2, 5 or 10 min | |
| Data protection | XXTEA encryption | |

Aranet radio bands and channels

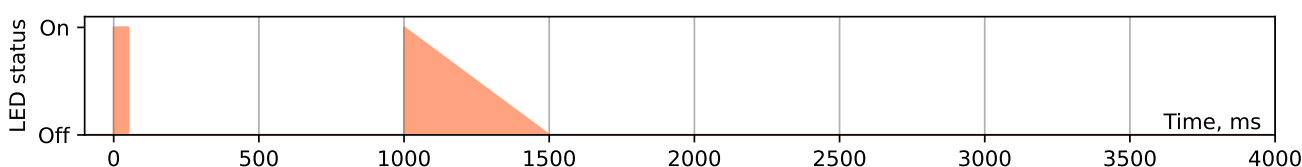
| Radio band | Channel 1 | Channel 2 | Channel 3 | Channel 4 |
|------------|---------------------|---------------------|---------------------|---------------------|
| EU868 | 868.1 MHz | 868.3 MHz | 868.5 MHz | — |
| US920 | 917.3 and 922.9 MHz | 917.5 and 923.1 MHz | 917.7 and 923.3 MHz | 917.9 and 923.5 MHz |
| AS923 | 923.1 MHz | 923.3 MHz | — | — |
| JP923 | 923.0 MHz | 923.4 MHz | — | — |
| KR923 | 923.1 MHz | 923.3 MHz | — | — |

- This table outlines the radio channels utilized by Aranet Sub-GHz radio technology for transmitting sensor data to the base station, complying with the legislation in various regions. To determine availability of this product in your region and the corresponding channels used, refer to the *Product numbers* table at the beginning of this document.

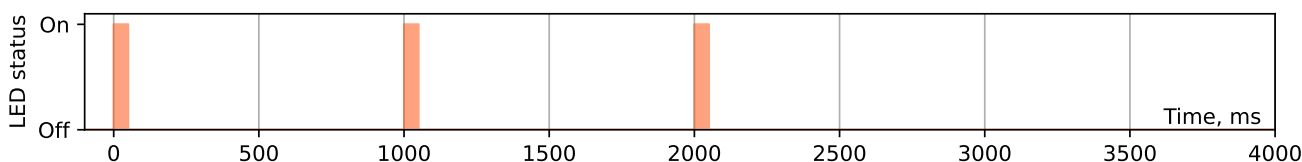
Pairing process description

As part of the Aranet PRO product series, this device enables wireless sensor reading transmission to the Aranet PRO and PRO Plus base station. Here's how to pair the sensor with the base station:

- Place the sensor within 20 m (60 ft) of the base station during pairing. Once paired, it can communicate over a much greater distance (up to 3 km / 1.9 mi line of sight).
- If the sensor uses a power supply unit, unplug it. Open the sensor casing and remove the battery for at least 20 seconds. Alternatively (for newer hardware revisions), locate the PAIRING button on the sensor PCB which can be used to initiate pairing without the removal of battery.
- Access the SENSORS menu in the base station Web GUI. Set the measurement interval and select PAIR SENSOR to start the pairing process.
- Within a 2-minute window, insert the battery or press the PAIRING button on the sensor PCB (for newer hardware revisions) to initiate pairing.
- A successful pairing is indicated by the sensor appearing in the Web GUI and a specific LED blink sequence on the sensor PCB (one to three short blinks followed by a longer fade-out blink of the LED):



- If pairing fails, the sensor won't appear in the Web GUI, and the LED blink sequence will consist only of three short blinks. In this case, repeat the procedure closer to the base station.



- After successful pairing, customize parameters like name and tags in the Web GUI. Close the sensor casing and install it in the desired location.

Important notes

- The sensor best performs when operated within 10–40 °C (50–104 °F) and 20–80 % RH, should be placed in stable temperature and relative humidity locations. Avoid operating in a heavily contaminated environment, under excessive ambient light, and/or wind.

Compliance information

CE Conformité Européenne

FC Federal Communications Commission (USA)

IC Innovation, Science and Economic Development Canada
