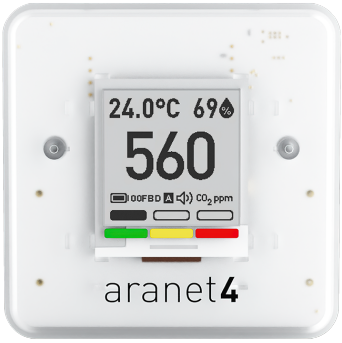
Aranet4 PRO

Wireless, portable device for measuring air quality. Measures carbon dioxide (CO_2) concentration, temperature, relative humidity, and atmospheric pressure. 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
TDSPC003	EU868	European Union
TDSPC0U3	US920	United States of America, Canada, South America, Australia, New Zealand
TDSPC0U3	AS923	BRN, KHM, HKG, IDN, LAO, TWN, THA, VNM, MYS, SGP
TDSPC2J3	JP923	Japan
Not available	KR923	South Korea

Sensor performance

General notes

- 95 % of the sensors measure within these typical limits in equilibrium state at the time of sale. For evaluation of the total measurement error, long-term drift has to be taken into account.
- Measurement time constant τ refers to the time it takes for the sensor reading to reach 63 % of a new steady-state value in response to a step change in the environment. It essentially represents the speed at which the sensor adjusts to changes in the measured quantity.

CO_2 concentration

Range	0–9999 ppm
Resolution	1 ppm
Accuracy	±(30 ppm + 3 % of reading)
Long term drift	Not available
Time constant τ	100 s

- CO_2 sensor of the device is calibrated at standard atmospheric pressure. CO_2 readings are pressure compensated and comply with the specifications down to 750 hPa. If the device has to be used at high altitude for a prolonged

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period of time, manual calibration of the unit should be performed for optimal performance. It is not intended to use the device higher than 4000 m (13'000 ft) above the sea level.

- CO_2 measurement accuracy is provided for a range 0–5000 ppm, temperature 15–35 °C (59–95 °F) and relative humidity 0–80 %. Accuracy above 5000 ppm is 10 % of reading, but not guaranteed since it is extrapolated form the calibrated range.
- If a drift of the CO_2 measurements occurs, calibration feature of the device should be used. Auto calibration mode is utilizing ABC algorithm whereas manual calibration mode demands sensor to be exposed to fresh air.

Temperature

Range	0–50 °C	32–122 °F
Resolution	0.1 °C	0.1 °F
Accuracy	±0.3 °C	±0.5 °F
Long term drift	0.03 °C/year	0.05 °F/year
Time constant τ	10 min	

- Temperature measurement time constant τ determined at 1 m/s air flow.

Relative humidity

Range	0–85 %
Resolution	1 %
Accuracy	±3 %
Long term drift	0.5 %/year
Time constant τ	6 min

Atmospheric pressure

Range	600–1100 hPa
Resolution	1 hPa
Accuracy	+3 hPa / -2 hPa
Long term drift	1 hPa/year
Time constant τ	0 s (instantaneous)

- Device measures absolute pressure, i.e., readings are not compensated for an elevation above the sea level.

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General specifications

Ingress protection rating	IP20	
Operating temperature range	0–50 °C	32–122 °F
Operating relative humidity range	0–85 %, non-condensing	
Dimensions	71×71×24 mm	2.80×2.80×0.94 in
Weight (incl. batteries)	104 g	3.7 oz
Enclosure material	Polycarbonate	
Power supply	2 pcs AA batteries	
Packaging includes	2 pcs AA alkaline batteries, configuration pin	

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	

- Specifically for JP923 radio band, reduced transmitter power of 13 dBm (20 mW) is used.

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.

Bluetooth transmit power

Normal range (Default)	-12 dBm
Extended range	4 dBm

- Bluetooth transmitter power can be adjusted through the settings in the *Aranet Home* mobile application. Enable the extended range feature only if the sensor experiences poor connectivity with the mobile application during typical use, such as in large rooms or through walls. Note that enabling this feature will reduce the expected battery lifetime listed below.

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- Aranet4 PRO is compatible with smart devices conforming to Bluetooth specification 4.1 and up.

Battery lifetime

	Alkaline batteries		Lithium batteries	
Measurement interval	Bluetooth Off	Bluetooth On	Bluetooth Off	Bluetooth On
1 min	1.0 years	0.9 years	1.3 years	1.2 years
2 min	2.0 years	1.6 years	2.6 years	2.0 years
5 min	4.2 years	2.8 years	5.8 years	3.8 years
10 min	6.7 years	4.0 years	9.8 years	5.5 years

- Data provided for a device with an active Bluetooth connection considers it being paired with the *Aranet Home* mobile application. Battery life may vary depending on Bluetooth activity and data transmission frequency.
- Battery lifetime data has been obtained by mathematical extrapolation and is provided for descriptive purposes only and is not intended to make or imply any guarantee or warranty.
- Battery lifetime tests and calculations performed assuming device is at 20 °C (68 °F) and using *Fujitsu Premium LR6G07* (alkaline) and *Energizer Ultimate Lithium L91* (lithium) AA batteries as reference.
- The operating temperature range may vary based on the battery type used. Generally, the range for alkaline batteries is between -20–50 °C (-4–122 °F), whereas for lithium batteries, it is -40–60 °C (-40–140 °F).

Measurement data memory specifications

Measurement interval	Historic data availability
1 min	3.5 days
2 min	7 days
5 min	15 days
10 min	30 days

- The device provides access to historical data through the *Aranet Home* mobile application. For users seeking high-resolution measurement data consistently, shorter measurement interval is recommended, as frequent interval changes can impact historical data resolution.
- When transitioning to a longer measurement interval (e.g., from 1 min to 10 min), the firmware computes average values from subsets to represent the longer sampling (for instance, a 10 min average derived from ten 1 min samples).
- Likewise, when shifting to a shorter interval (e.g., from 10 min to 1 min), the memory stores additional samples mirroring the longer interval's data (such as ten 1 min samples with identical values as the original 10 min sample).
- The provided information applies to a device with the latest firmware installed. We strongly advise upgrading the firmware using the *Aranet Home* mobile application as soon as an update becomes available.

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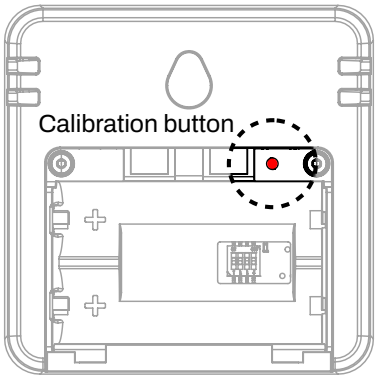
Important notes

- Device is qualified to work properly within ambient clean air. Qualification for use in harsh environment is the duty of the user of the sensor. Exposure to volatile organic compounds, acids or bases, etching substances such as H_2O_2, NH_3, shall be avoided.
- Do not leave the device in direct sunlight! Exposure to intense sunlight can adversely affect the performance and longevity of the e-ink display, potentially leading to issues like reduced contrast, diminished readability, or even permanent damage to the display pixels or electronic components. Moreover, sun exposure can also adversely impact accuracy of sensor readings.
- Condensation or direct contact with liquid water may degrade measurement accuracy, affect sensor performance, and reduce sensor lifetime.

CO_2 measurement calibration procedure

The sensor arrives factory-calibrated and includes an auto-calibration feature. However, should measurement drift occur or any discrepancy between the sensor reading and the actual environment become apparent, manual recalibration in an ambient CO_2 level environment is possible. The steps for manual calibration are outlined below.

- **Initiate calibration (Option A):** Remove the battery cover. Locate the small button above the batteries (see diagram on the right) and use a thin tool to press and hold it to start calibration. **This button might be missing on some hardware versions of the product.**
- **Initiate calibration (Option B):** Using the *Aranet Home* mobile app, select your paired device. Go to *Device settings (gear icon)* ► *CO_2 calibration* ► *Start calibration*.
- **Calibration process:** Place the sensor in fresh outdoor air, ensuring no one is nearby to influence the reading with their breath. The device will measure CO_2 levels repeatedly to establish a baseline. The device screen (and the app, if used) will show the progress.
- **Canceling calibration:** To stop the recalibration and retain previous calibration values, press and hold the physical button on the back of the device. If you started calibration via the app, you can also use the stop button there.
- **Completion:** The device screen and app (if used) will indicate when calibration is complete. Reinstall the sensor in its usual location and resume normal use.





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Compliance information

CE	Conformité Européenne
FC	Federal Communications Commission (USA)
IC	Innovation, Science and Economic Development Canada

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