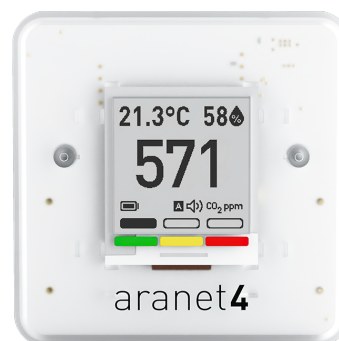# Aranet4 HOME

Wireless, portable device for measuring air quality. Measures carbon dioxide (CO_2) concentration, temperature, relative humidity, and atmospheric pressure. This sensor, belonging to the HOME sensor series, is intended to be used together with the *Aranet Home* mobile application for extended data browsing capabilities.

Product numbers

Globally	TDSPC0H3

Sensor performance

General notes

- Sensors perform within the specified accuracy limits at the time of purchase, assuming they are in an equilibrium state. 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 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	

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)

• Atmospheric pressure measurements are exclusively accessible through the *Aranet Home* mobile application and are not displayed on the device screen.

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

General specifications

Ingress protection rating	IP20	
Operating temperature range	0–50 °C	32–122 °F
Operating relative humidity range	0–85 %	
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	

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.

• Aranet4 HOME is compatible with smart devices conforming to Bluetooth specification 4.1 and up.

Battery lifetime

Measurement interval	Alkaline batteries		Lithium batteries	
	Bluetooth Off	Bluetooth On	Bluetooth Off	Bluetooth On
1 min	1.0 years	0.9 years	1.3 years	1.1 years
2 min	2.0 years	1.6 years	2.6 years	2.0 years
5 min	4.0 years	2.8 years	5.6 years	3.8 years
10 min	6.5 years	3.8 years	9.4 years	5.3 years

• Data provided for a device with an active Bluetooth connection considers it being paired with the *Aranet Home* mobile application and engaging in regular data transfer with the mobile phone or tablet.

• 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.

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.

Calibration button

Calibration
IN PROGRESS
42/50
To cancel
PRESS & HOLD
"CAL" button
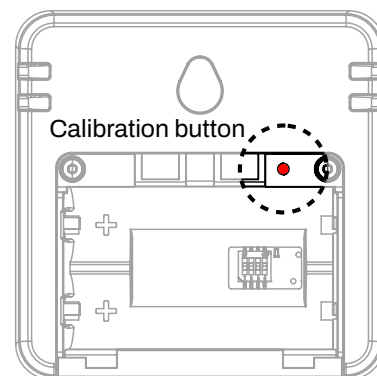
Important notes

- 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.

ver. 3.4 (2025-02-07)
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Page 4 of 5

Compliance information

CE   Conformité Européenne

FC   Federal Communications Commission (USA)

IC   Innovation, Science and Economic Development Canada