Senseair ExploraCO$_2$

Battery powered and IoT connected Indoor Air Quality Monitor

Senseair ExploraCO$_2$ is a LoRaWAN certified, advanced and versatile 3-in-1 sensor, designed for installation in the air-conditioned zone. It measures CO$_2$ concentration, temperature and relative humidity in the ambient air accurately without need for additional compensation. Adapting reporting when CO$_2$ level changes more than 100ppm (higher than 750ppm). The data is encrypted and securely transmitted via LoRaWan to a cloud service. You can either use our dashboard service to display the data or design your own user interface utilising the open API.

Senseair ExploraCO$_2$ combines all the necessary elements for effective climate control in commercial office buildings, hospitals, hotels, schools and other facilities. Using CO$_2$-monitoring for demand control ventilation (DCV) allows healthy, comfortable and cost-effective environments for the occupants. Simple and easy to install without any wires, makes the Senseair ExploraCO$_2$ ideal for retrofitting in existing buildings.

Standard specification

Measured gas	Carbon dioxide (CO$_2$)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range (CO$_2$)	400–5000ppm (extended up to 10000ppm)
Accuracy (CO$_2$)	±30ppm ±3% of reading [1, 2]
Measurement range (Temp)	-20–60°C
Accuracy (Temp)	±0.2°C (@ 0–50°C)
Measurement range (RH)	0–100%
Accuracy (RH)	±2%RH (@ 10–90%RH)
Measurement interval	1min (default) [3]
Report interval	20min (default) [4]
Dimensions	111 x 77 x 26mm
Weight	136g
Life expectancy	>15 years [5]
Operating range	0–50°C, 0–100%RH
Power supply	2 x Li-SOCl2 batteries 3.6V, 3.6Ah, A type (incl.)
Communication	LoRaWAN
Frequency band	868MHz [6]

Note 1:   15–35°C, 0–80%RH, after three eight-day periods, each period followed by ABC command set in the Calculation Control byte.

Note 2:   Specification is referenced to uncertainty of calibration as mixtures (±1%).

Note 3:   Configurable, Min. 1min, Max. 65534min (~1.5 months)

Note 4:   From when the latest measurement is sent over the air.

Note 5:   Battery life expectancy >5 years (@ Reporting interval 20min).

Note 6:   Used in EU. Other options will be available.

Key benefits

- Battery powered[3]
- Three sensors in one housing: CO$_2$, temp and RH
- LoRaWAN certified, IoT connected using the leading radio interfaces on the market
- Industry leading security solution with cryptographic co-processor
- Periodic measurement reports and adaptive reporting
- Remote indoor air quality monitoring through the cloud-based web portal, app or integration with HVAC control systems
- No calibration needed

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Senseair ExploraCO$_2$ Technical Specification

General Performance:

Storage Temperature Range	-40–70°C
Life Expectancy	>15 years (battery life length >5 years (@ Reporting interval 20min, SF1)).
Maintenance Interval	Maintenance-free [1]
Operating Temperature Range	0–50°C
Operating Humidity Range	0–100%RH, non condensing humidity environment
Operating Environment	Residential and commercial indoor environment

Electrical / Mechanical:

Power source	2x 3.6V, 3.6Ah Li-SOCl2 batteries, A type

CO$_2$ Measurement:

Sensing Method	Non-dispersive infrared (NDIR) waveguide technology
Sampling Method	Diffusion
Measurement Range	400–5000ppm$_{vol.}$ (extended up to 10 000ppm)
Accuracy [2]	±30ppm ±3% of reading (@15–35°C and 0–80%RH) [3,4]
Measurement Interval	1min (default) over air, configurable [5]
Report Interval	20min [6] (default) over air, configurable

Temperature Measurement:

Measurement Range	-20–60°C
Accuracy	±0.2°C (@ 0–50°C)

Relative Humidity Measurement:

Measurement Range	0–100%RH
Accuracy	±2%RH (@ 10–90%RH)

Communication interface

Network	LoRaWAN
Frequency band	868MHz [7]

Note 1: No calibration required in normal indoor air as ABC (Automatic Baseline Correction) is used.

Note 2: In normal IAQ applications, accuracy is defined after minimum three ABC-periods of continuous operation with ABC.

Note 3: Accuracy is specified over operating temperature range. Specification is refer enced to certified calibration mixtures. Uncertainty of calibration gas mixtures (±1% currently) is to be added to the specified accuracy for absolute measurements.

Note 4: Repeatability is included. Uncertainty of calibration gases (±1%) is added to the specified accuracy.

Note 5: Measurement interval Min. 1min, Max. 65534min (~1.5 months)

Note 6: From when the latest measurement is sent over the air.

Note 7: Used in EU. Other options will be available.

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