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 100 ppm (higher than 750 ppm). 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 – 5000 ppm (extended up to 10000 ppm)
Accuracy (CO_2)	±30 ppm ±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	1 min (default) [3]
Report interval	20 min (default) [4]
Dimensions	111 x 77 x 26 mm
Weight	136 g
Life expectancy	>15 years [5]
Operating range	0 – 50 °C, 0 – 100% RH
Power supply	2 x Li-SOCl2 batteries 3.6 V, 3.6 Ah, A type (incl.)
Communication	LoRaWAN
Frequency band	868 MHz [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. 1 min, Max. 65534 min (~1.5 months)

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

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

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 20 min, 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	2 x 3.6 V, 3.6 Ah Li-SOCl2 batteries, A type

CO_2 measurement:

Sensing method	Non-dispersive infrared (NDIR) waveguide technology
Sampling method	Diffusion
Measurement range	400 – 5000 $ppm_{vol.}$ (extended up to 10 000 ppm)
Accuracy [2]	±30 ppm ±3% of reading (@15 – 35 °C and 0 – 80% RH) [3, 4]
Measurement interval	1 min (default) over air, configurable [5]
Report interval	20 min [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	868 MHz [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 referenced 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. 1 min, Max. 65534 min (~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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