

aSENSE (Disp)



An advanced transmitter that measures CO₂ concentration and temperature.

aSENSE is an advanced transmitter for installation in the climate zone. It measures both CO₂ concentration and temperature in the ambient air. The data is transmitted to a BMS system or controller and can be configured with UIP Software.

aSENSE is a key component for climate control of buildings and other processes. The transmitter is flexible and suits many different ventilation strategies. It is also a cost-efficient gas alarm sensor for spaces where carbon dioxide gas is a potential danger.

The product is designed to control ventilation by transmitting the measured carbon dioxide and temperature value to the Master or DDC of the system. A common application is controlling ventilation in rooms with varying numbers of people such as offices, classrooms, and cinemas. The ventilation control is based on temperature and CO₂ measurements and helps saving energy and create a healthy indoor environment.

Standard specification

Measured gas	Carbon dioxide (CO ₂)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range	0–2000ppm
OUT1 CO ₂	0–10VDC, 0–2000ppm 0/4–20mA, 0–2000ppm
OUT2 °C	0/2–10VDC, 0–50 °C
OUT3	-
Accuracy (CO ₂)	±30ppm ±3% of reading
Dimensions	120 x 82 x 30mm
Life expectancy	> 15 years
Operating temp. range	0–50 °C
Power supply	24VAC/VDC
Communication	UART

Key benefits

- Maintenance-free
- Compliant with ANSI/ASHRAE Standard 62.1-2022
- Compliant with RESET grad B
- Compliant with WELL Building Standard® (WELL v2™)
- Available in different carbon dioxide measurement ranges
- Available in different housings
- Internal automatic self-diagnostics
- Cost-optimised for connection to DDC



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Senseair

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an Asahi Kasei company

aSENSE (Disp) Technical Specification

General Performance:

Storage Temperature Range	-40–70 °C (display model Disp: -20–50 °C)
Sensor Life Expectancy	> 15 years ¹
Maintenance Interval	No maintenance required ¹
Self-Diagnostics	Complete function check, yellow LED and LCD error indication (display model Disp)
Display (model Disp)	4 Digits, 7 segments LCD with ppm indicator
Warm-up Time	> 1min. (@ full specs > 5min.)
Operating Temperature Range	0–50 °C ²
Operating Environment	Residential, commercial spaces

Electrical / Mechanical:

Power Input	24VAC ±20%, 50/60Hz (half-wave rectifier input)
Power Consumption	< 1W average
Electrical Connections	1.5mm ² screw terminals for power input (G+, G0) and outputs (OUT1, OUT2) ³

CO₂ Measurement:

Sensing Method	Non-dispersive infrared (NDIR) waveguide technology with ABC automatic background calibration algorithm
Sampling Method	Diffusion
Response Time (T1/e)	< 3min. diffusion time
Measurement Range	0–2000ppm
Accuracy	±30ppm ±3% of measured value ^{1,4}
Pressure Dependence	+1.6% reading per kPa deviation from normal pressure, 100kPa

Temperature Measurement:

Operating principle	Negative Temperature Coefficient (NTC) resistor
Measurement range	-20–60 °C
Accuracy / Digital resolution	±1 °C ⁵ / 0.1 °C on display, 0.01 °C by UART

Outputs:

OUT1	Voltage or mA current loop output, selectable by jumper ⁶
Linear Conversion Range, voltage	0/2–10VDC for 0–2000ppm _{vol}
Linear Conversion Range, mA current	0/4–20mA for 0–2000ppm _{vol}
OUT2	Voltage or mA current loop output, selectable by jumper ⁶
Linear Conversion Range, voltage	0/2–10VDC for 0–50 °C
Linear Conversion Range, mA current	0/4–20mA for 0–50 °C

Voltage outputs:

D/A Conversion Accuracy	±2% of reading ±20mV
D/A Resolution	10mV
Electrical Characteristics	R _{OUT} < 100Ω, R _{LOAD} > 5kΩ

Current loop output:

D/A Conversion Accuracy	±2% of reading ±0.3mA
D/A Resolution	0.02mA
Electrical Characteristics	R _{LOAD} < 500Ω

Note 1: In normal IAQ applications, accuracy is defined after minimum three (3) ABC periods of continuous operation. Some industrial applications do require maintenance.

Note 2: Lower operation temperature range can be reached by adding a box heater assembly.

Note 3: Different options exist and can be customised depending on the application. Please, contact Senseair for further information.

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

Note 5: Valid only for units configured in voltage output mode.

Note 6: During power up, OUT1 and OUT2 are defined to be low. Exact value depends on many factors including temperature.