aSENSE (Disp)

An advanced transmitter that measures CO_2 concentration and temperature.

aSENSE is an advanced transmitter for installation in the climate zone. It measures both CO_2 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 CO_2 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 (CO2)	±30ppm ±3% of reading
Dimensions	120 x 82 x 30mm
Life expectancy	>15 years
Operating temperature range	0–50°C
Power supply	24VAC/DC
Communication	UART

Key benefits

- Maintenance-free
- Available in different carbon dioxide measurement ranges
- Available in different housings
- Internal automatic self-diagnostics
- Cost-optimised for connection to DDC

Senseair

aSENSE (Disp) Technical Specification

General Performance:

Storage Temperature Range	-40–70°C (display model Disp: -20–50°C)
Sensor Life Expectancy	>15years[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[2]	0–50°C
Operating Environment	Residential, commercial spaces

Electrical / Mechanical:

Power Input	24VAC ±20%, 50/60Hz (half-wave rectifier input)
Power Consumption	<1W average
Electrical Connections[3]	1.5mm² screw terminals for power input (G+, G0) and outputs (OUT1, OUT2)

CO_2 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[1,4]	±30ppm ±3% of measured value
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[5] / Digital resolution	±1°C / 0.1°C on display, 0.01°C by UART

Outputs:

OUT1[6]	Voltage or mA current loop output, selectable by jumper
Linear Conversion Range, voltage	0/2–10VDC for 0–2000ppm_{vol}
Linear Conversion Range, mA current	0/4–20mA for 0–2000ppm_{vol}
OUT2[6]	Voltage or mA current loop output, selectable by jumper
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.