aSENSE Ind (Disp)

CO_2 and temperature transmitter for installation in the climate zone.

aSENSE Ind (Disp) 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.

The aSENSE Ind (Disp) is designed to control ventilation by transmitting the measured carbon dioxide and temperature value to the Master of the system or DDC to save energy and ensure a good indoor environment.

Standard specification

Measured gas	Carbon dioxide (CO_2)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range CO_2	0–2000ppm
OUT1 linear output (CO_2)	0/2–10VDC, 0–2000ppm 0/4–20mA, 0–2000ppm
OUT2 linear output (Temp)	0/2–10VDC, 0–50 °C 0/4–20mA, 0–50 °C
Accuracy (CO_2)	±30ppm ±3% of reading
Operating principle Temp	Negative Temperature Coefficient (NTC) resistor
Measurement range Temp	0–50 °C
Accuracy (Temp)	±1 °C
Dimensions	152 x 85 x 49mm
Life expectancy	> 15 years
Power supply	24VAC/VDC
Power consumption	< 1W average
Communication	UART (Modbus)

Key benefits

- Maintenance-free
- Compliant with ANSI/ASHRAE Standard 62.1-2022
- Compliant with RESET grad B
- Compliant with WELL Building Standard® (WELL v2™)
- Contributes to lower energy costs
- RS-485 communication as option

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aSENSE Ind (Disp) Technical Specification

General Performance:

Storage Temperature Range	-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	4 Digits, 7 segments LCD with ppm indicator
Warm-up Time	< 5 min
Operating Temperature Range	0–50 °C[2]
Operating Humidity Range	0–85% RH (non condensing)
Operating Environment	Residential, commercial, industrial 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)

CO_2 Measurement:

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

Temperature Measurement:

Operating principle	Negative Temperature Coefficient (NTC) resistor
Measurement range	0–50 °C
Accuracy[4]/ Digital resolution	±1 °C / 0.1 °C (display), 0.01 °C by UART

Outputs:[5]

Linear analogue outputs:

OUT1	Voltage or mA current loop output, selectable by jumper
Linear Conversion Range, voltage	0/2–10VDC for 0–2000ppm
Linear Conversion Range, mA current	0/4–20mA for 0–2000ppm
OUT2	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 (10 bit)
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 (10 bit)
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: Repeatability is included. Uncertainty of calibration gases (±1% currently) is added to the specified accuracy.

Note 4: Valid only for units configured in voltage output mode.

Note 5: During power up, OUT1 and OUT2 are defined to be low. Exact value depends on many factors including temperature.

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