

# aSENSE Duct (Disp)



## CO<sub>2</sub> -and temperature transmitter for installation in ventilation duct.

aSENSE Duct (Disp) is an advanced transmitter for installation in the ventilation duct. It measures both CO<sub>2</sub> 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 Duct (Disp) 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.

aSENSE Duct (Disp) 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<sub>2</sub> measurements and helps to save energy and create a healthy indoor environment.

## Standard specification

Measured gas	Carbon dioxide (CO <sub>2</sub> )
Operating principle	Non-dispersive infrared (NDIR)
Measurement range	0–2000ppm
OUT1 linear output (CO <sub>2</sub> )	0/2–10VDC, 0–2000ppm 0/4–20mA, 0–2000ppm
OUT2 linear output	0/2–10VDC, 0–50°C 0/4–20mA, 0–50°C
Accuracy (CO <sub>2</sub> )	±30ppm ±3% of reading
Dimensions	152 x 85 x 47mm
Life expectancy	>15 years
Operation temperature range	0–50°C
Power supply	24VAC/DC
Power consumption	<1W average
Communication	UART (prepared for Modbus)

## Key benefits

- Maintenance-free
- Contributes to lower energy costs
- RS485 communication as option



# aSENSE Duct (Disp) Technical Specification

## General Performance:

Storage Temperature Range	-40–70°C (display model Disp: -20–50°C)
Sensor Life Expectancy	>15years <sup>1</sup>
Maintenance Interval	No maintenance required <sup>1</sup>
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 <sup>2</sup>	0–50°C
Operating Environment	Residential, commercial spaces

## Electrical / Mechanical:

Power Input	24VAC $\pm 20\%$ , 50/60Hz (half-wave rectifier input)
Power Consumption	<1W average
Electrical Connections <sup>4</sup>	1.5mm <sup>2</sup> screw terminals for power input (G+, G0) and outputs (OUT1, OUT2)

## CO<sub>2</sub> 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	0–2000 ppm <sub>vol</sub>
Accuracy <sup>1,4</sup>	$\pm 30\text{ppm} \pm 3\%$ 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 <sup>5</sup> / Digital resolution	$\pm 1^\circ\text{C}$ / $0.1^\circ\text{C}$ on display, $0.01^\circ\text{C}$ by UART

## Outputs:

OUT1 <sup>6</sup>	Voltage or mA current loop output, selectable by jumper
Linear Conversion Range, voltage	0/2–10VDC for 0–2000ppm <sub>vol</sub>
Linear Conversion Range, mA current	0/4–20mA for 0–2000ppm <sub>vol</sub>
OUT2 <sup>6</sup>	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	$\pm 2\%$ of reading $\pm 20\text{mV}$
D/A Resolution	10mV
Electrical Characteristics	$R_{\text{OUT}} < 100\Omega$ $R_{\text{LOAD}} > 5\text{k}\Omega$

### Current loop output:

D/A Conversion Accuracy	$\pm 2\%$ of reading $\pm 0.3\text{mA}$
D/A Resolution	0.02mA
Electrical Characteristics	$R_{\text{LOAD}} < 500\Omega$

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- 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 ( $\pm 1\%$  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.