

aSENSE™ Family

CO₂ and Temperature Transmitters



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.

STANDARD SPECIFICATION*

Measured gas	Carbon dioxide (CO ₂)
Operating Principle	Non-dispersive infrared (NDIR)
Measurement range	0 - 2000ppm*
OUT1 linear output	0/2 - 10VDC, 0 - 2000ppm CO ₂ 0/4 - 20mA, 0 - 2000ppm CO ₂
OUT2 linear output	0/2 - 10VDC, 0 - 50°C 0/4 - 20mA, 0 - 50°C
Accuracy	±30ppm ±3% of reading
Dimensions	120 x 82 x 30mm
Life Expectancy	>15years
Operation temperature range	0 - 50°C
Operation humidity range	0 - 85%RH (non-condensing)
Power supply	24 V AC/DC
Power consumption	<1W average
Communication	UART (prepared for Modbus)

* Available in different carbon dioxide measurement ranges and different housings.

APPLICATIONS

aSENSE™ is designed to control ventilation by transmitting the measured carbon dioxide and temperature value to the system's Master or DDC. 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 to save energy and create a healthy indoor environment.

KEY BENEFITS

- Maintenance-free
- Contributes to lower energy costs
- Available in different carbon dioxide measurement ranges and different housings
- RS485 communication as option



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A BGI company

aSENSE™ carbon dioxide transmitter *Technical Specification*

General Performance:

Storage Temperature Range	-40 - 70°C (display model <i>Disp</i> : -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 <i>Disp</i>)
Display (model <i>Disp</i>)	4 Digits, 7 segments LCD with ppm indicator
Warm-up Time	>1min. (@ full specs >5min.)
Conformance with standards	EMC 2004/108/EC directive, EN 61326-1:2006, Class B equipment, Table 1 - Basic immunity test requirements RoHS directive 2011/65/EU
Operating Temperature Range ²	0 - 50°C
Operating Humidity Range	0 - 85%RH (non-condensing)
Operating Environment	Residential, commercial, industrial spaces. ³

Electrical / Mechanical:

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

CO₂ Measurement:⁴

Sensing Method	non-dispersive infrared (NDIR) waveguide technology with ABC automatic background calibration algorithm
Sampling Method	diffusion
Response Time (T _{1/e})	<3min. diffusion time
Measurement Range	0 - 2000ppm _{vol} .
Accuracy ^{1,5}	±30ppm ±3% of measured value
Pressure Dependence	+1.6% reading per kPa deviation from normal pressure, 100kPa

Temperature Measurement:⁴

Operating principle	Negative Temperature Coefficient (NTC) resistor
Measurement range	-20 - 60°C
Accuracy ⁶ / Digital resolution	±1°C (TBD) / 0.1°C on display, 0.01°C by UART

Linear Signal Outputs:^{4,7}

OUT1	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	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



aSENSE™ Ind Disp **aSENSE™ Duct Disp** **aSENSE™ Duct**
 Dim: 152 x 85 x 47mm Dim: 152 x 85 x 47mm Probe length: 245mm

aSENSE™ Family

Available in different carbon dioxide measurement ranges and different housings

Art.no	Product	Additional features
045-8-0001	aSENSE™	No display
045-8-0002	aSENSE™ <i>Disp</i>	Display
045-8-0003	aSENSE™ <i>RL</i>	No display, relay
045-8-0025	aSENSE™ <i>Disp RL</i>	Display, relay
045-8-0019	aSENSE™ <i>Duct</i>	No display, protection class IP65 ⁸
045-8-0031	aSENSE™ <i>Duct Disp</i>	Display, protection class IP65 ⁸
045-8-0032	aSENSE™ <i>Ind</i>	No display, suits industry environment
045-8-0036	aSENSE™ <i>Ind Disp</i>	Display, suits industry environment
045-8-0028	aSENSE™ <i>Ind Disp RL</i>	Display, relay, suits industry environment



Dim: 120 x 82 x 30mm

aSENSE™ Disp **aSENSE™ Ind**

Art.no	Product	Accessory
00-0-1034	aSet RS485 Adapter	Accessory

Note 1: In normal IAQ applications, accuracy is defined after minimum 3 weeks 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: SO₂ enriched environments are excluded.

Note 4: Different options exist and can be customized depending on the application. Please, contact SenseAir for further information!

Note 5: Repeatability is included. Uncertainty of calibration gases (±2% currently) is added to the specified accuracy.

Note 6: Valid only for units configured in voltage output mode.

Note 7: During power up, OUT1 and OUT2 are defined to be low. Exact value depends on many factors including temperature.

Note 8: For connecting cables with the diameter 5 - 9 mm.