

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
- Five year warranty



aSENSE™ carbon dioxide transmitter Technical Specification

General Performance:

Storage Temperature Range -40 - 70°C (display model *Disp*: -20 - 50°C)
 Sensor Life Expectancy >15years¹
 Maintenance Interval no maintenance required¹
 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.)

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 Range² 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 Connections⁴ 1.5mm² 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
 Accuracy⁶ / 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™ Disp | Display |
| 045-8-0003 | aSENSE™ RL | No display, relay |
| 045-8-0025 | aSENSE™ Disp RL | Display, relay |
| 045-8-0019 | aSENSE™ Duct | No display, protection class IP65 ⁸ |
| 045-8-0031 | aSENSE™ Duct Disp | Display, protection class IP65 ⁸ |
| 045-8-0032 | aSENSE™ Ind | No display, suits industry environment |
| 045-8-0036 | aSENSE™ Ind Disp | Display, suits industry environment |
| 045-8-0028 | aSENSE™ Ind Disp RL | Display, relay, suits industry environment |
| 00-0-1034 | aSet RS485 Adapter | Accessory |



aSENSE™ Disp aSENSE™

Dim: 120 x 82 x 30mm

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.