

eSENSE™ FAI (Fresh Air Indicator)

CO₂ Alarm Transmitters



eSENSE™ FAI is a new simple, low-cost, state-of-the-art infrared and maintenance-free carbon dioxide alarm for installation in areas where the carbon dioxide levels need to be monitored, such as class-rooms and offices.

eSENSE™ FAI measures the carbon dioxide concentration in the ambient air and alarms with sound and light when the levels are exceeding the defined levels.



STANDARD SPECIFICATION*

| | |
|-----------------------------|-----------------------------------|
| Measured gas | Carbon dioxide (CO ₂) |
| Operating Principle | Non-dispersive infrared (NDIR) |
| Measurement range | 0-3000 ppm* |
| OUT1 linear output | 0-10 VDC, 0-2000 ppm |
| OUT2 linear output | 2-10V (or 4-20mA), 0-2000 ppm |
| Accuracy | ± 30 ppm ± 3 % of reading |
| Dimensions | 100 x 80 x 28 mm |
| Life Expectancy | > 15 years |
| Operation temperature range | 0 to +50 °C |
| Operation humidity range | 0 to 85% RH (non-condensing) |
| Power supply | 24 V AC/DC |
| Power consumption | < 1 Watt average |
| Communication | UART (Modbus protocol) |

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

APPLICATIONS

eSENSE™ FAI is a cost-optimized sensor solution for climate monitor. By measuring CO₂ users get a good indicator to when adequate "fresh" outside air must be supplied for an acceptable indoor air quality. The ventilation will then be based on actual demand. It helps users decrease your energy consumption and yet have a healthy indoor climate.

eSENSE™ FAI has solutions fit both US standard Jbox and European standard Jbox.

Warranty: five (5) years.

KEY BENEFITS

- Audible alarm
 - Mute button
 - One analogue output
 - Internal automatic self-diagnostics.
 - Maintenance-free
 - Three Leds: Red, yellow, green
- Alarm configuration:3
 Green: 0 - 800 ppm
 Yellow: 800 -1400 ppm
 Red: >1400 ppm

eSENSE™ FAI carbon dioxide alarm transmitter *Technical Specification*

General Performance:

| | |
|-----------------------------------|--|
| 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 | 0 to +50 °C |
| Storage Temperature Range | -40 to +70 °C (display model -20 to +70 °C) |
| Operating Humidity Range | 0 to 95% RH (non-condensing) |
| Operating Environment | residential, commercial and industrial spaces 1 |
| Warm-up Time | 1 min. (@ full specs □ 15 minutes) |
| Sensor Life Expectancy | > 15 years |
| Maintenance Interval | no maintenance required 2 |
| Self Diagnostics | complete function-check, LCD error indication (display model) |
| Display..... | 4 Digits, 7 segments LCD with ppm indicator |

Electrical / Mechanical:

| | |
|-----------------------------------|---|
| Power Input | .24 VAC/VDC ±20%, 50 Hz (half-wave rectifier input) |
| Power Consumption | < 1 Watt average |
| Connection screw terminal A | 1,5 mm ² |

CO₂ Measurement:

| | |
|---|--|
| Sensing method | Gold-plated infrared (NDIR) waveguide technology with Automatic Background Calibration (ABC) and passive gas diffusion (no moving parts) |
| Response Time (T _{1/e}) | < 10 sec. @ 30 cc/min. flow rate, < 3 min. diffusion time |
| Repeatability..... | ± 20 ppm ± 1 % of reading |
| Accuracy ² | ± 30 ppm ± 3 % of reading |
| Annual Zero Drift ² | < ± 10 ppm |
| Pressure Dependence | + 1.6 % reading per kPa |
| Measurement range..... | 0 to 3 000 ppm |

Output signal terminal CO₂:

| | |
|------------------------------------|--|
| OUT1 linear conversion range | 0 to 10 VDC for 0 to 2 000 ppm |
| Audible alarm..... | Typ 94 Db Mute button |
| | D/A resolution 10 bits, 10mV |
| D/A conversion accuracy | ± 2 % of reading ± 50 mV |
| Electrical characteristics..... | R _{OUT} < 100 Ohm, R _{LOAD} > 5 kOhm |

eSENSE™ FAI

Available in different carbon dioxide measurement ranges and different housings

| Art.no | Product | Additional features |
|------------|----------------|---|
| 050-8-0061 | eSENSE™ FAI | Fits European standard J-boxes (mute button on the side) |
| 050-8-0057 | eSENSE™ FAI II | Fits US standard J-boxes (visible red mute button on the front) |

Note 1: The SO₂ enriched environments are excluded.

Note 2: In normal IAQ applications (@ NTP), accuracy is defined after minimum 3 weeks of continuous operation.

Note 3: The tolerance of the span calibration gas (2 % unless otherwise requested) and test gas adds to the total uncertainty.

Note 3: Can be ordered with special settings.



eSENSE FAI (standard)
Dim.: 100 x 80 x 28



eSENSE II FAI
Dim.: 130 x 85 x 30