

eSENSE™ II FAI

Fresh Air Indicator

CO₂ Alarm Transmitters



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

APPLICATIONS

eSENSE™ II FAI is a cost-optimised 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™ II FAI has solutions that fit both US standard J-box and European standard J-box.

STANDARD SPECIFICATION

Measured gas	Carbon dioxide (CO ₂)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range	0–3000ppm
OUT1 linear output	0–10VDC, 0–2000ppm
Accuracy (CO ₂)	±30ppm ±3% of reading
Dimensions	130 x 85 x 30mm
Life expectancy	>15 years
Operation temperature range	0–50°C
Operation humidity range	0–95%RH (non-condensing)
Power supply	24VAC/DC
Power consumption	<1Watt average

KEY BENEFITS

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



eSENSE™ // FAI carbon dioxide alarm transmitter Technical Specification

General Performance:

Operation Temperature Range	0–50°C
Storage Temperature Range	-40–70°C (display model -20–70°C)
Operation Humidity Range	0–95% 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	24VAC/VDC ±20%, 50Hz (half-wave rectifier input)
Power Consumption	<1Watt average
Connection screw terminal A	1.5mm ²

CO₂ Measurement:

Sensing method	Platinum EQC-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	±20ppm ±1% of reading
Accuracy	±30ppm ±3% of reading ²
Annual Zero Drift	<±10ppm ²
Pressure Dependence	+1.6% reading per kPa
Measurement range	0–3000ppm

Output signal terminal CO₂:

OUT1 linear conversion range	0–10VDC for 0–2000ppm
Audible alarm	Typ. 94dB Mute button
	D/A resolution 10 bits, 10mV
D/A conversion accuracy	±2% of reading ±50mV
Electrical characteristics	R _{OUT} <100Ω, R _{LOAD} >5kΩ

Note 1: The SO₂ enriched environments are excluded.

Note 2: In normal IAQ applications (@ NTP), accuracy is defined after minimum 3 ABC periods of continuous operation.
The tolerance of the span calibration gas (±1 % unless otherwise requested) and test gas adds to the total uncertainty.