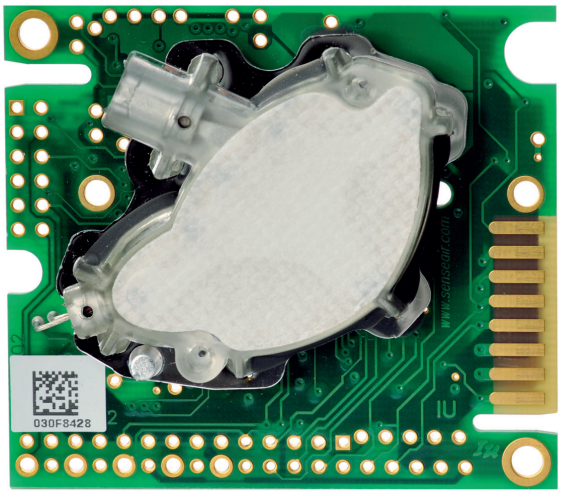
Senseair K30 FR



Fast Response CO_2 Sensor Module

Senseair K30 FR sensor module optimised for fast response time. The sample cell is well protected by a particle filter and is designed for fast diffusion without any need for external pump. In addition, there is a tube inlet to be able to feed on-line test gas through the sensor.
The module is designed for high volume production with full traceability by sensor serial number on all manufacturing processes and key components. Every sensor is individually calibrated and is provided with UART digital interface.

Senseair K30 FR is designed for simple integration into products that requires a fast update rate of CO_2 measurement.

The sensor can be used in a wide range of applications where fast changes need to be detected, such as gas leakage in food and pharmaceutics packaging industry. Other uses are human occupancy detection and leakage detection in industry environments.

Standard specification

Measured gas	Carbon dioxide (CO_2)
Operating principle	Non-dispersive infrared (NDIR)
Measurement range CO_2	0 – 5000 ppm
OUT1 Linear Output	0 – 10 V DC = 0 – 5000 ppm
OUT2 Linear Output	0 – 5 V DC = 0 – 5000 ppm
OUT3 Digital Output	On ≥800 ppm Off ≤700 ppm
OUT4 Digital Output	On ≥1000 ppm Off ≤900 ppm
Accuracy CO_2	±30 ppm ±3% of reading
Dimensions (L x W x H)	51 x 57 x 14 mm
Life expectancy	>3 years
Operating temperature range	0 – 50 °C
Operating humidity range	0 – 95% RH (non-condensing)
Power supply	4.5 – 14 V DC
Current consumption	70 mA (average)
Response time$_{T90}$	2 seconds @ 0.5 l/min tube gas flow
Communication	I^2C, UART (Modbus)

Key benefits

- Fast response time
- Individually calibrated
- High quality
- Long term stability





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Senseair K30 FR Technical Specification

General Sensor Performance:

Storage temperature range	-30 – 70 °C, (non condensing)
Sensor life expectancy	>3 years
Maintenance interval	Periodic Zero / Background calibration required [1]
Self-diagnostics	Complete function-check of the sensor module
Operating temperature range	0 – 50 °C
Operating humidity range	0 – 95% RH, (non condensing) [2]

Electrical / Mechanical:

Power input	4.5 – 14 V DC max rating, (without reverse polarity protection) stabilised to ±5% over load and line changes. Ripple voltage less than 100 mV. [3]
Dimensions (Length x Width x Height)	51 x 57 x 14 mm

CO_2 Measurement:

Operating principle	Non-dispersive infrared (NDIR) waveguide technology
Sampling method	Diffusion
Response time ($T_{1/e}$)	<20 s, diffusion time @ 0.5 l/min tube gas flow
Measurement range	0 – 5000 ppm
Accuracy	±30 ppm ±3% of reading [4]

Outputs:

Linear

OUT1	0 – 10 V DC = 0 – 5000 ppm
OUT2	0 – 5 V DC = 0 – 5000 ppm
Electrical Characteristics	R_{OUT} <100 Ω, R_{LOAD} >5 kΩ, Power input >5.5 V [4]

Digital

OUT3	On ≥800 ppm, Off ≤700 ppm
OUT4	On ≥1000 ppm, Off ≤900 ppm

Note 1: Optional calibrations are Background calibration, which requires that the sensor is exposed to fresh air (400 ppm CO_2) and Zero calibration, which requires the sensor measuring cell to be completely evacuated from CO_2 e.g. by exposing it to Nitrogen or Soda Lime CO_2 scrubbed air.

Note 2: For applications operating continuously in high humidity, contact Senseair for further information.

Note 3: Accuracy is specified over operating temperature range at normal pressure 101.3 kPa. Specification is referenced to certified calibration mixtures. Uncertainty of calibration gas mixtures (±1% currently) is to be added to the specified accuracy for absolute measurements.

Note 4: For the buffered output OUT2 the maximum output voltage range equals power voltage input minus 0.5 V.

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