

Datasheet Sensor Module

CO₂, humidity, and temperature sensor

- NDIR CO₂ sensor technology
- Integrated temperature and humidity sensor
- Bi-colour Led for local user feedback of CO₂ level, below Green above Red
- Dual-channel detection for superior stability
- Profile factor: 80 mm x 80 mm x 21 mm
- Measurement range: 400 ppm – 10.000 ppm
- Accuracy: $\pm(30 \text{ ppm} + 3\%)$
- Fully calibrated and linearized
- Rear knockout for cable entry (20 mm dia)
- Multiple mounting options, including single gang UK plug back box mounting points



Product Summary

CMOSens® Technology for IR detection enables carbon dioxide measurements of the highest accuracy at a competitive price.

Along with the NDIR measurement technology for detecting CO₂ comes a best-in-class humidity and temperature sensor integrated on the very same sensor module. Ambient humidity and temperature can be measured by algorithm expertise through modelling and compensating of external heat sources without the need for any additional components. The sensor module allows easy integration into different Eco systems.

Carbon Dioxide is a key indicator for indoor air quality. Thanks to new energy standards and better insulation, houses have become increasingly energy-efficient, but the air quality can deteriorate rapidly. Active ventilation is needed to maintain a comfortable and healthy indoor environment and improve the well-being and productivity of the inhabitants. The sensor solutions offer an accurate and stable monitoring of CO₂ in the air, as well as temperature and humidity. This enables our customers to develop new solutions that increase energy efficiency and simultaneously support the well-being of everyone within their Eco system.

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1 Sensor Specifications

CO₂ Sensor Specifications

Parameter	Conditions	Value
CO ₂ measurement range	-	0 – 40,000 ppm
Accuracy ²	400 ppm – 10,000 ppm	± (30 ppm + 3%MV)
Repeatability ³	400 ppm – 10,000 ppm	± 10 ppm
Temperature stability ⁴	T = 0 ... 50°C	± 2.5 ppm / °C
Response time ⁵	τ _{63%}	20 s
Accuracy drift over lifetime ⁶	400 ppm – 10,000 ppm ASC field-calibration algorithm activated and SCD30 in environment allowing for ASC, or FRC field-calibration algorithm applied.	± 50 ppm

Humidity Sensor Specifications

Parameter	Conditions	Value
Humidity measurement range	-	0 %RH – 100 %RH
Accuracy	25°C, 0 – 100 %RH	± 3 %RH
Repeatability	-	± 0.1 %RH
Response time	τ _{63%}	8 s
Accuracy drift	-	< 0.25 %RH / year

Temperature Sensor Specifications

Parameter	Conditions	Value
Temperature measurement range	-	- 40°C – 70°C
Accuracy	0 – 50°C	± (0.4°C + 0.023 × (T [°C] – 25°C))
Repeatability	-	± 0.1°C
Response time	τ _{63%}	> 10 s
Accuracy drift	-	< 0.03 °C / year

Electrical Specifications

Parameter	Conditions	Value
Average current	Update interval 2 s	40 mA
Max. current	During measurement	100 mA
DC supply voltage	Mirco USB, USB-C, Terminal Block (TB)	Micro 5 V, Type C 5 V, 12 V, 20 V TB 9-20 V

Operation Conditions, Lifetime and Maximum Ratings

Parameter	Conditions	Value
Temperature operating conditions	Valid for CO ₂ sensor.	0 – 50°C
Humidity operating conditions	Non-condensing. Valid for CO ₂ sensor.	0 – 95 %RH
Storage temperature conditions	Exceeding specified range will result in damage of the sensor.	- 40°C – 70°C
Maintenance interval	Maintenance free when ASC field-calibration algorithm is used.	None
Sensor lifetime	-	15 years

2 Sensor Outline Drawing

