



## Senseair S9 2%

### CO<sub>2</sub> sensor for industrial and harsh applications

The Senseair S9 2% is an IP65, industrial-grade CO<sub>2</sub> sensor that delivers reliable, accurate monitoring across demanding environments.

Using field-proven technology, Senseair S9 2% offers long-term stability, rugged durability, and air-quality control in applications where harsh conditions and precision requirements meet.

#### Product overview

Article number	099-16-0004
Operating principle	Non-dispersive infrared (NDIR)
Measured gas	CO <sub>2</sub>
Measurement range	0–20 000 ppm
Accuracy	±(300 ppm + 3 % of reading)
Operating conditions	0–50 °C 0–95 %RH
Power supply	15–30 VDC
Average power consumption	< 1 W
Output	Linear analogue output 0–5 VDC, 0–20 000 ppm
Maintenance:	Periodical calibration
Life expectancy	> 10 years
Dimensions	Height: 46 mm (without connector) Diameter: 38 mm

#### Key benefits

- Dust and water resistant (IP65 rating)
- Engineered for harsh environments
- Proven and reliable technology
- Removable protective cover
- Individually calibrated sensors

#### Applications

- Poultry farming
- Incubators
- Industrial applications
- Greenhouses

# 1. Sensor performance

## 1.1 CO<sub>2</sub> Sensing performance

Parameter	Conditions	Value
Target gas	-	Carbon dioxide (CO <sub>2</sub> )
Operating principle	-	Non-dispersive infrared (NDIR)
Gas sampling method	-	Diffusion
Measurement range	-	0–20 000 ppm
Accuracy <sup>1,2</sup>	-	±(300 ppm + 3 % of reading)
<b>Output resolution</b>	<b>-</b>	<b>x ppm</b>
Measurement interval	Default	2
Warm-up time		<1 min (@ full specs <10 min)
Sampling	Default	1 sample
Response time	T <sub>90%</sub>	T <sub>63</sub> <60 s @ zero air velocity
Compensation <sup>3</sup>	Temperature	On-board sensor element
	Pressure	Dependency is 1.6 % reading per kPa deviation from normal pressure

1. Specification is referenced to uncertainty of calibration gas mixtures ±1 %.
2. Shipping, rough handling and assembly can temporarily affect the accuracy of the sensor. Accuracy can be fully restored by forced recalibration or after a maximum of 3 ABC periods after mounting the sensor.
3. CO<sub>2</sub> readings are temperature compensated.

## 1.2 General performance

Parameter	Conditions	Value
Operating temperature <sup>1</sup>		0–50 °C
Operating humidity	Non-condensing	0–95 %RH
Power supply		15–30 V
Average power consumption		< 1 W
Sensor dimensions	Height (w/o connector)	46 mm
	Diameter	38 mm
Cable Dimensions	Copper area	0.34 mm <sup>2</sup>
	Length	2000/5000 ±50 mm
	Diameter	5.9 mm
Life expectancy		> 10 years
Storage temperature		-40–60 °C
<b>Weight</b>		<b>x g</b>
Output		Linear Conversion Range: 0 to 5 V for 0 to 20 000 ppm R <sub>LOAD</sub> >5 kΩ D/A conversion accuracy: ±2% of reading ±20 mV
Maintenance <sup>4</sup>		Periodical zero calibration
Housing, IP class		IP65 (with protective cover)

- Sensor is calibrated to meet product specifications within standard range 0–50 °C. Sensor can survive temperatures outside of operating range, but measurement accuracy is not guaranteed.

## 1.3 Operating range

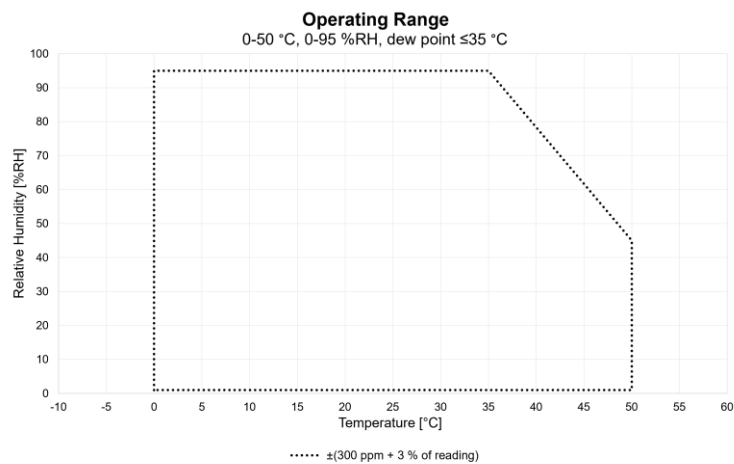


Figure 1: Operating range

## 2. Drawing - Dimensions

Dimensional drawing of sensor with dimensions and their tolerances in millimetres.

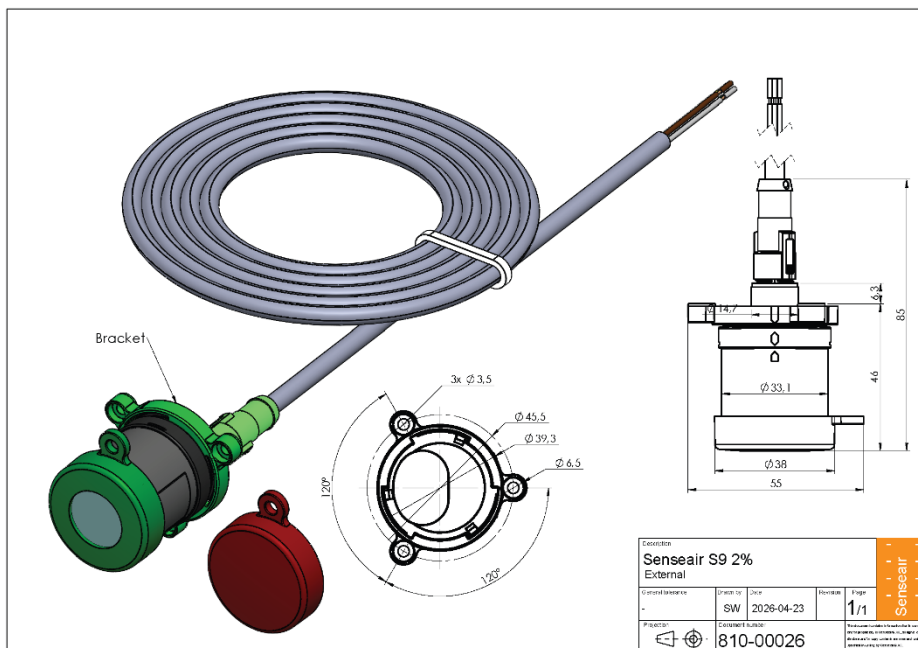


Figure 2: Dimensions of Senseair S9

### 2.1 Cable

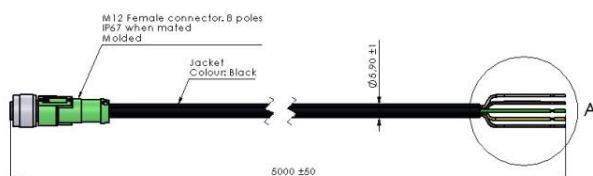


Figure 3: Cable drawing

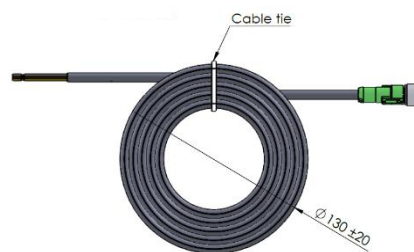
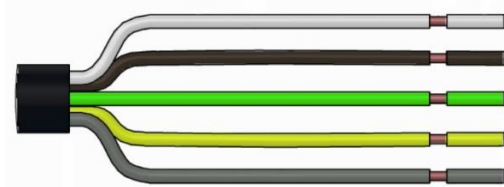


Figure 4: Cable coil



Cable colour	Signal	Description
White	Ground	GND
Brown	Power	15-30 VDC
Green	Not used	N/A
Yellow	VOUT	0-5 V, CO <sub>2</sub> 0-20 000 ppm
Grey	zCAL	Ground input > 15s → Zero calibration

Figure 5: Cable connections

## 2.2 Mounting bracket

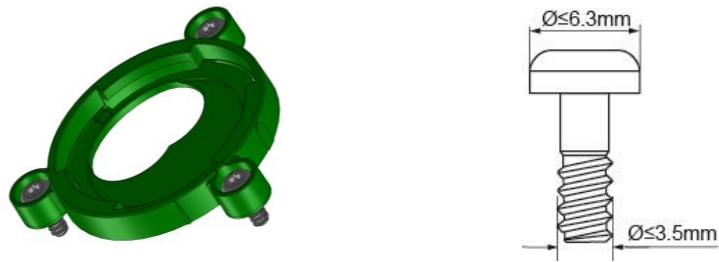


Figure 6: Mounting bracket and recommended screw dimensions

## 3. Calibration

Before activating **zero calibration**, sensor must be purged by some gas mixture free from CO<sub>2</sub> (i.e. Nitrogen or Soda Lime CO<sub>2</sub> scrubbed air), until reading is stable. Use zero calibration cover and connect gas by tube IN. To initiate zero calibration connect zCAL (grey wire) to GND for >15 s.

The tube connections have markings (arrows) showing gas flow direction. Recommended gas flow: 1l/min.

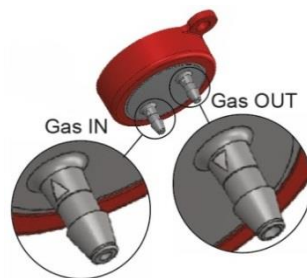


Figure 7: Zero calibration cover

## 4. Maintenance

Use protective cover during cleaning procedure.

Filter must not be cleaned. Sensor must be replaced.



Figure 8: Protective cover

## 5. Revision History

Date	Version	Page(s)	Changes
May 2026	1	1	Initial release of Marketing page.

## IMPORTANT NOTICES

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