



MS03-010 CO2 Sensor

The MS03-010 CO2 sensor module adopts non-dispersive infrared (NDIR) technology. Combined with MAXMAC's patented long optical-path gas chamber structure and accurate calibration algorithms, all units are calibrated under a self-developed high-precision calibration system, enabling the sensor to deliver outstanding high accuracy and high reliability.

With maintenance-free operation, service life exceeds 15 years. This sensor is a module specially designed for easy product integration. It can be widely used in ventilation control to improve energy efficiency and indoor environments, in bio-related process monitoring to improve yield and economic value, and in personal safety applications.

Key features:

- High accuracy
- High stability
- Consistency
- Long service life
- Compact size

Applications:

- Ventilation control
- Greenhouse growing
- Indoor air monitoring
- In-vehicle air monitoring
- Refrigerant leak detection
- Animal respiration monitoring

Item	Description
Measured gas	Carbon dioxide CO ₂
Measurement principle	Non-dispersive infrared (NDIR)
Range	400 ~ 10000 ppm / other customized ranges
Resolution	1 ppm
Measurement interval	4 seconds
Accuracy	Note 1 400-3000 ppm: +/- (50 ppm + 3% of reading) Other ranges: +/- (50 ppm + 5% of reading) or +/- 5%
Pressure dependence	Note 2 +1.6% of reading / kPa
Warm-up time	15 seconds
Response time t63%	< 20 seconds
Service life	>= 15 years
Operating voltage	4.5V DC ~ 6.5V DC
Operating current	Peak 300 mA (<10 ms/cycle), average 15 mA
Sleep current	< 100 uA (sleep disabled by default; enabled via protocol)
Operating temperature	0 °C ~ 50 °C
Operating humidity	5% ~ 95% RH, non-condensing, dew point 40°C
Storage temperature	-30 °C ~ 70 °C
Dimensions	30 mm * 20 mm * 9.7 mm
Weight	approx. 5 grams
Communication interface and output	UART (Modbus-compatible, expandable to RS485), PWM output
Maintenance requirements	Maintenance-free in normal applications when ABC is enabled

Note:

1. Sensor accuracy verification is based on standard reference gas, and the accuracy tolerance of the standard gas should be $\leq 2\%$. Sensor accuracy is verified before shipment. Transportation, assembly, and long-term storage may cause accuracy drift after delivery. When drift occurs, it is recommended to perform an ABC procedure or manual calibration.

2. When the product is used at high altitude or under different air pressures, the influence of air pressure on the reading should be considered and compensated.