

CO₂ SENSORS OVERVIEW



Application:

Principle:

Range:

Response time:

Signal output:

Dimensions:

General CO₂ monitoring

Opto-acoustic spectroscopy

0 - 2000 ppm CO₂

< 160 sec (t₉₀)

0-1 V analog and Rs232 digital

50 x 28 x 17 mm (L x W x H)



Application:

Principle:

Range:

Response time:

Signal output:

Dimensions:

General CO₂ monitoring

Double beam infrared absorption

0-3000 ppm or 0-5 Vol.% CO₂

30 sec (t₉₀)

4-20 mA

74 x 55 x 30 mm (L x W x H)



Application:

Principle:

Range:

Response time:

Signal output:

Dimensions:

Indoor air quality monitoring

Double beam infrared absorption

0-3000 ppm CO₂

30 sec (t₉₀)

4-20 mA

78 x 78 x 35 mm (L x W x H)



Application:

Principle:

Range:

Response time:

Signal output:

Dimensions:

CO₂ monitoring (heavy duty)

Double beam infrared absorption

0-3000 ppm or 0-5 Vol.% CO₂

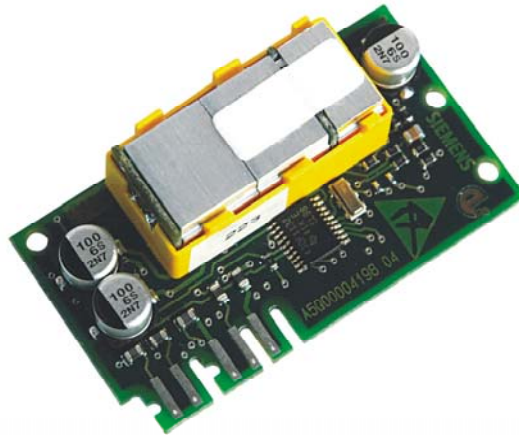
30 sec (t₉₀)

4-20 mA

90 x 85 x 65 mm (L x W x H)



OPTO-ACOUSTIC CO₂ SENSOR FOR OEM APPLICATIONS



SPECIFICATION

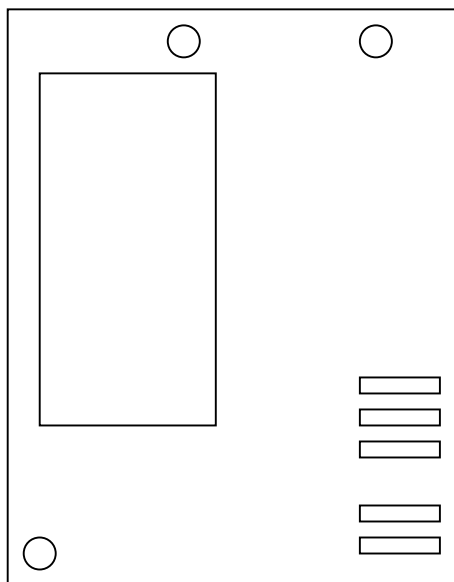
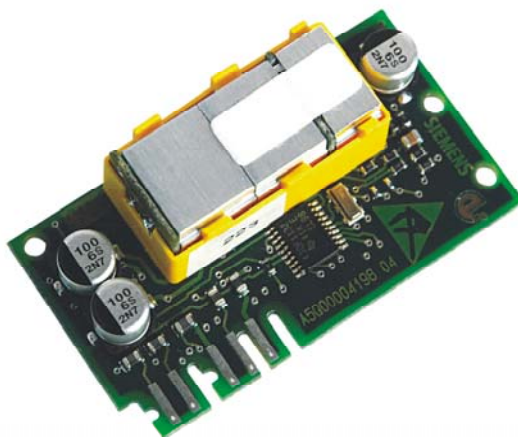
Measurement principle:	Photo-acoustic Spectroscopy	
Range:	0 – 2000 ppm CO ₂	
Warm up time:	appr. 3 minutes	
Accuracy:	smaller +/- (1% f.s.d + 2% range)	
Non linearity:	smaller +/- (1% f.s.d. + 2% range)	
Output variations:	smaller 1% f.s.d. = 20 ppm	
Response time t90:	smaller 160 sec.	
Long term stability:	smaller 5% f.s.d. over 8 years	
Temperature influence:	smaller +/- 0.4% f.s.d. / °C at 15 - 35 °C other smaller +/- 0.5% f.s.d. / °C	
Humidity influence:	smaller +/- 0.2% f.s.d. / % r.h.	
Pressure influence:	smaller +/- 0.15% f.s.d./ hPa	
Estimated lifetime:	more than 10 years	
Supply voltage, nominal:	5.0 V d.c.	Supply voltage range: 4.75 – 7.5 V d.c.
Operating current:	smaller 40 Ma	Temperature range: -5°C up to +45°C
Analog output signal:	0 – 1 V	Pressure range: 85 – 110 hPa
Digital output signal:	RS232	Airflow: smaller 12 m/s
Humidity range:	5 - 95% rel. (non condensing)	
Dimensions:	50 x 28 x 17 mm (L x W x H)	
Weight:	15 g	



OPTO-ACOUSTIC CO₂ SENSOR FOR OEM APPLICATIONS

New, simple and low cost, this miniature sensor for the detection of Carbon Dioxide is especially designed for demand controlled ventilation applications using Infrared Photoacoustic Spectroscopy as the measuring principle. This technique guarantees high accuracy and excellent long term stability, simultaneously allowing miniaturisation of sensor size and reducing power consumption. Other applications and/or detection of other gases are possible with this detection principle. A new dual cell technology and advanced signal processing algorithms additionally improve its performance especially in critical environments such as ventilation ducts. The sensors are not affected by dust, water vapour and most chemicals. All sensor modules are factory calibrated and maintenance free.

CONNECTIONS



- Ground – Earth
- Tipcom – RS232
- V+ (5V) – 4.75-7.7VDC input
- 3.3Vout – do not use (3.3V output)
- Analog Out, 0-1V - Analogue



INFRARED CO₂ SENSOR FOR OEM APPLICATIONS

The innovative material and construction of this double beam infrared measuring system ensures carbon dioxide is detected quickly and precisely. A new digital algorithm evaluates and processes the measured signals, offering long-term stability in a light-weight, compact and cost-effective package.

The infrared measuring system detects the absolute carbon dioxide content of ambient air and monitors itself constantly, signalling if there is a malfunction of its hardware or software.



SPECIFICATION

Principle:	Double beam Infrared absorption		
Range:	Variant 1:	standard: 0 – 3,000 ppm optional: 0 – 4,000 ppm optional: 0 – 5,000 ppm optional: 0 – 10,000 ppm optional: 0 – 20,000 ppm optional: 0 – 30,000 ppm	
	Variant 2:	standard: 0 – 5 % volume optional: 0 – 6 % volume optional: 0 – 7 % volume	
Accuracy:	+/- 2% of f.s.d.	Output signal:	4 – 20 mA
Reproducibility:	+/- 1% of f.s.d.	Ambient pressure:	900 – 1100 hPa
Response time t90:	appr. 30 sec	Ambient humidity:	15 – 95% rel.
Gas entry:	by diffusion	Operating voltage:	24 V d.c. +/- 5%
Ambient temperature:	-10°C up to +50°C		
Dimensions:	74 x 55 x 30 mm (L x W x H)		



INFRARED CO₂ MONITOR FOR INDOOR AIR QUALITY MONITORING



SPECIFICATION

Principle:	Two beam infrared
Range:	0 – 3000 ppm CO ₂
Accuracy:	+/- 2% fsd
Reproducibility:	+/- 1% fsd
Response time:	appr. 30 sec
Gas entry:	by diffusion
Operating voltage:	24 V d.c. +/- 5%
Output signal:	4 – 20 mA
Operating temperature:	-10°C up to +50°C
Operating pressure:	900 – 1100 hPa
Operating humidity:	15 – 95% rel.
Dimensions:	78 x 78 x 35 mm (L x W x H)



INFRARED CO₂ SENSOR FOR HEAVY DUTY AND INDUSTRIAL APPLICATIONS

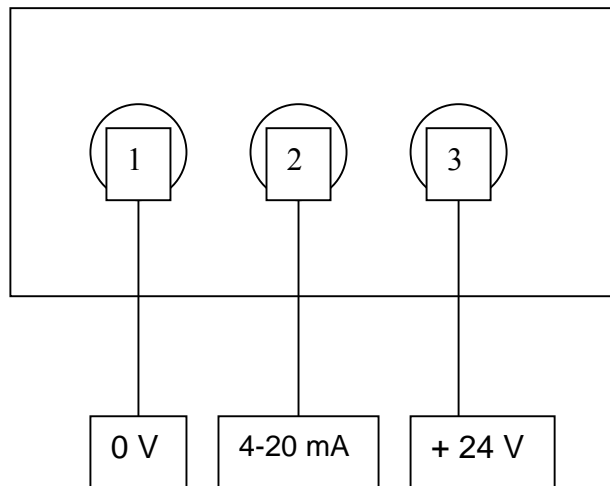


SPECIFICATION

Principle:	Two beam infrared
Range:	Variant 1: standard: 0 – 3,000 ppm optional: 0 – 4,000 ppm optional: 0 – 5,000 ppm optional: 0 – 10,000 ppm optional: 0 – 20,000 ppm optional: 0 – 30,000 ppm Variant 2: standard: 0 – 5 % volume optional: 0 – 6 % volume optional: 0 – 7 % volume
Accuracy:	+/- 2% f.s.d.
Reproducibility:	+/- 1% f.s.d.
Response time:	appr. 30 sec
Gas entry:	by diffusion
Operating voltage:	24 V d.c. +/- 5%
Output signal:	4-20 mA
Operating temperature:	-10°C up to +50°C
Operating pressure:	900 - 1100 hPa
Operating humidity:	15 – 95% rel.
Housing material:	Aluminium housing, suitable for wall mounting
Dimensions:	90 x 85 x 65 mm (L x W x H)



Terminal diagram OEM Infrared CO₂ Sensors



For the connection between the infrared sensor and Controller, a four wire screened cable with a total loop resistance of max. 100 Ω should be used. Terminal 1 and 3 is used for power supply 24 V d.c. The measuring signal 4-20 mA is available at terminal 2.

