

Indoor Air Quality Module



iAQ-core

Air quality prediction beyond CO₂

Indoor air quality has traditionally been a measure of temperature, humidity and carbon dioxide (CO₂) levels. Most consumers, however, evaluate air quality by the amount of volatile organic compounds (VOCs), such as smoke, cooking odors, bio-effluence, outdoor pollutants or from human activities. While temperature and humidity are easy to measure, sensors for measuring CO₂ (IR absorption) can be expensive and VOCs have been difficult to detect – until now.

Superior detection at smallest footprint

The AppliedSensor iAQ-core Indoor Air Quality Module is a low-cost, ultra-compact solution for detecting poor air quality. This module uses micromachined metal oxide semiconductor (MOS) technology to detect a broad range of VOCs while correlating directly with CO₂ levels in the room.

Energy savings

The iAQ-core is equipped with an MOS sensor element for the detection of a broad range of reducing gases such as CO and VOCs. A change of resistance in the presence of these gases generates a signal that is translated into parts per million (ppm) CO₂ equivalent units. When defined threshold limits are exceeded, the module signals the system to initiate activities such as increasing ventilation or releasing fragrance, or provides a message to open a window, switch on an air cleaner, etc. When VOC levels are minimized, the module instructs the system to return to standby, thereby saving energy, lowering operating costs and maintaining a healthy environment.

Air quality as close to human perception as possible

In any demand-controlled ventilation/actuation environment where air quality is important, including commercial and residential facilities (offices, classrooms, kitchens, bathrooms, living and bedrooms etc.) the iAQ-core Indoor Air Quality Module performs accurately and reliably. Plus, the module's small size opens up a wide variety of new applications where space is at a premium.

Key Benefits

- Direct correlation to CO₂ levels
- High sensitivity and fast response
- Micro size for convenient installation
- Low power consumption

Substances Detected

- Alcohols
- Aldehydes
- Aliphatic hydrocarbons
- Amines
- Aromatic hydrocarbons
- CO, CH₄, LPG
- Ketones
- Organic acids



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Features

Sensor

Sensing technology	MEMS metal oxide semiconductor
Sensing range	450-2000 ppm CO ₂ equivalents
Module	Automatic baseline correction

Electrical	Continuous Operation Mode	Pulsed Operation Mode
Power supply	3.3V, ±0.1, max. 20 mV ripple	3.3V, ±0.1, max. 20 mV ripple
Power consumption	67 mW	9 mW
Output signal options	I ² C	I ² C
First functional reading after startup	5 minutes	5 minutes
Measurement interval	1.000 msec.	11.000 msec.

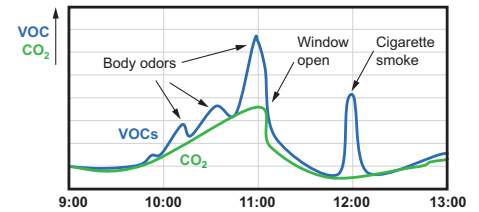
Environmental (Continuous and Pulsed)

Temperature range:	
Operation	0 to 50°C
Storage	-25 to 50°C
Humidity range	5 to 95% r.h., non-condensing

Mechanical (Continuous and Pulsed)

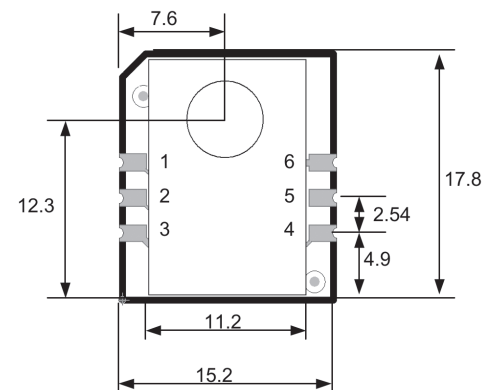
Dimensions (approximate values):	
PCB	15.24 x 17.78 mm
Height PCB	1.7 mm
Lid	11.2 x 17.78 mm
Total Height	4.3 mm
Sensor position (approximate values)	7.6 x 12.3 mm
Diameter	9 mm
Weight	Approximately 1g
IP-Class	00
Connector	Card edge (cut via)

Comparison of Air Quality Measurement in Meeting Room



Traditional carbon dioxide sensors do not respond to changes in air quality caused by odors, cigarette smoke, and other volatile organic compounds.

Dimensions and Pin Out



Pin	Name	Comment
1	NC	Not connected
2	SCL	Serial clock
3	GND	Ground
4	SDA	Serial data
5	NC	Not connected
6	VCC	+3.3V

About AppliedSensor

AppliedSensor GmbH designs, manufactures and markets chemical gas sensor solutions for appliance, automotive, building automation, consumer and industrial applications. Established in 2000, AppliedSensor is a world-leading supplier of safety, energy efficiency and comfort solutions for global mass markets. Corporate headquarters are located in Reutlingen, Germany.

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