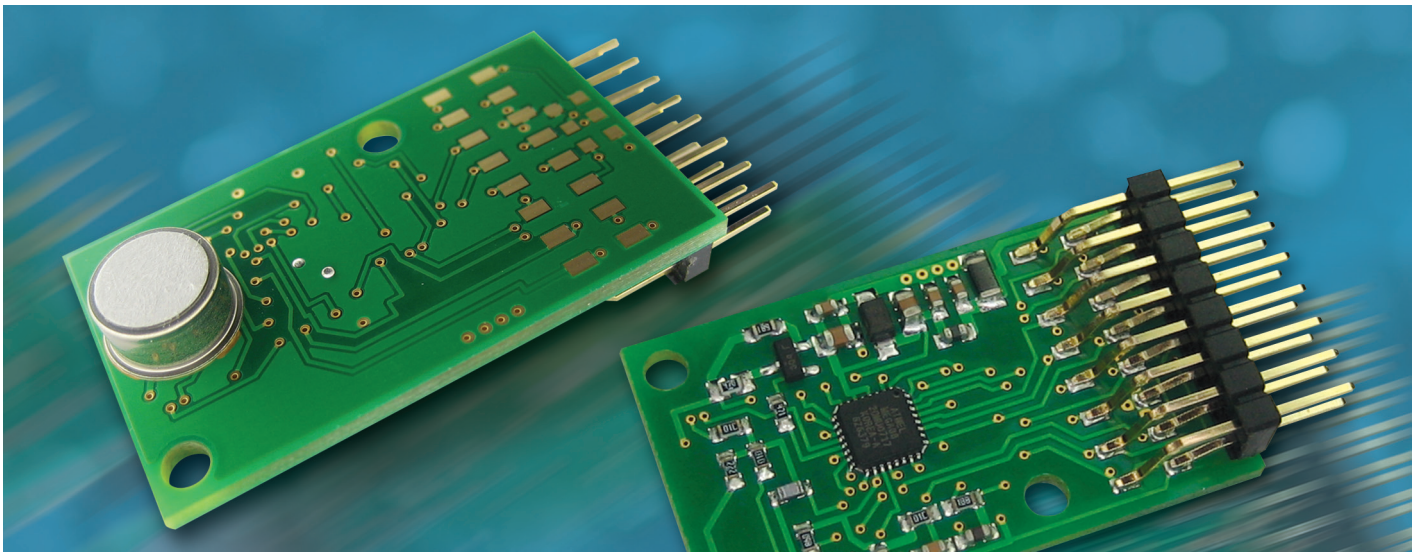
AppliedSensor

*Intelligent air quality... beyond $CO_2$*

# Indoor Air Quality Module



## iAQ-2000

### Air quality prediction beyond $CO_2$

The climate control industry views indoor air quality as a measure of temperature, humidity and carbon dioxide ($CO_2$) levels. Most consumers, however, evaluate air quality by the amount of volatile organic compounds (VOCs), such as smoke, cooking odors, bio-effluence and outdoor pollutants. While temperature and humidity are easy to measure, sensors for measuring $CO_2$ (IR absorption) can be expensive and VOCs difficult to detect – until now.

### Superior detection with MOS technology

The AppliedSensor iAQ-2000 Indoor Air Quality Module is a sensitive, low-cost solution for detecting poor air quality. This module uses micro-machined metal oxide semiconductor (MOS) technology to detect a broad range of VOCs while correlating directly with $CO_2$ levels in the room.

### Energy savings

The iAQ-2000 is equipped with a 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 linked to specific gas concentration ranges and is translated into parts per million (ppm) VOC + $CO_2$ equivalent units. When defined threshold limits are exceeded, the module alerts the climate control system to increase ventilation. When VOC levels are minimized, the module instructs the system to decrease ventilation, thereby saving energy and lowering building operating costs.

### Air quality as close to human perception as possible

In any demand-controlled ventilation environment where air quality is important, including large commercial facilities, offices, classrooms, kitchens and bathrooms, the iAQ-2000 Indoor Air Quality Module performs accurately and reliably. Plus, the module's small size and low power consumption facilitate installation in a variety of applications.

## Key Benefits

- Direct, reliable correlation to $CO_2$ levels
- High sensitivity and fast response
- Small size for convenient installation
- Low power consumption

## Substances Detected

- Alcohols
- Aldehydes
- Aliphatic hydrocarbons
- Amines
- Aromatic hydrocarbons
- CO, $CH_4$, LPG
- Ketones
- Organic acids

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# iAQ-2000 Indoor Air Quality Module

## Features

### Sensor

| | |
|---|---|
| Sensing technology | MEMS metal oxide semiconductor |
| Sensing range | 450-2000 ppm $CO_2$ equivalents |
| Module | Automatic baseline correction |
| | Flexible communications |

### Electrical

| | |
|---|---|
| Power supply | 5.0 ± 0.25V, max. 20 mV ripple |
| Power consumption | 30 mA |
| Output signal options | TTL |
| | RS232 (TTL level) |
| | $I^2C$ |
| | 0-5V |
| | PWM |
| First functional reading after startup | 15 minutes |

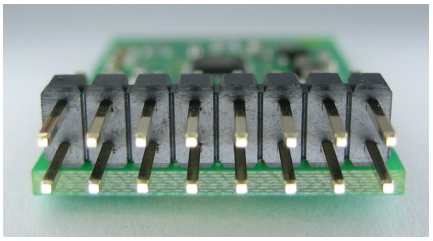
### Environmental

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

### Mechanical

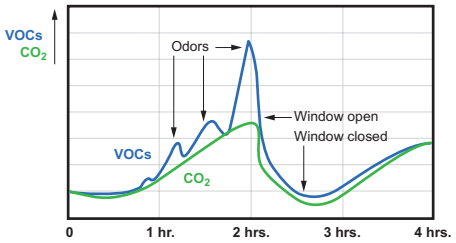
| | |
|---|---|
| PCB Dimensions (approximate) | 22 x 38 mm |
| Weight (approximate) | 10 grams |
| Connector | 2x8-pin male header, 2.54 mm pitch |

## PCB / Connector Pin Out



| MISO | MOSI | RXD | TXD | SDA | SCL | I/O | SS |
|---|---|---|---|---|---|---|---|
| Reset | SCK | GND | 0-5V | PWM | VCC | I/O | I/O |

## 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.

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