AppliedSensor
Intelligent air quality... beyond CO_2

Indoor Air Quality Module

iAQ-engine

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 at smallest footprint

The AppliedSensor iAQ-engine Indoor Air Quality Module is a low-cost, ultra-compact 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-engine 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) 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-engine 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, reliable correlation to CO_2 levels
- High sensitivity and fast response
- Micro size for convenient installation
- Low power consumption

Substances Detected

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

iAQ-engine 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	45 mA
Output signal options	I^2C
	0-5 V
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

Dimensions (approximate values):	
PCB	15.24 x 17.78 mm
Height PCB	1.7 mm
Hood	11.2 x 17.78 mm
Total Height	4.3 mm
Sensor position (approximate values)	7.6 x 12.3 mm
Radius	3.5 mm
Weight	Approximately 1g
IP-Class	00
Connector	Card edge (cut via)

Comparison of Air Quality Measurement in Meeting Room
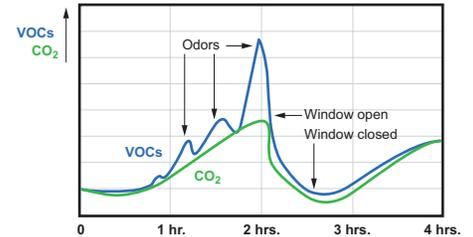
Traditional carbon dioxide sensors do not respond to changes in air quality caused by odors, cigarette smoke, and other volatile organic compounds.

Dimensions and Pin Out
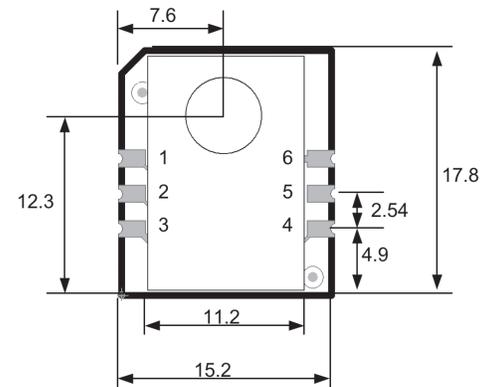
Pin	Name	Comment
1	PRED	Prediction i/o
2	SCL	Serial clock
3	GND	Ground
4	SDA	Serial data
5	NC	Not connected
6	VCC	+5V