AppliedSensor

Intelligent air quality... beyond CO_2

Indoor Air Quality Module

iAQ-100

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-100 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-100 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-100 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-100 Indoor Air Quality Module

Features

Sensor

Sensing technology	MEMS metal oxide semiconductor
Sensing range	0-2000 ppm VOC + CO_2 equivalents
Module	Self-test at power on
	Automatic baseline correction

Electrical

Power supply:

Voltage range	12 VDC ± 2 VDC
Power consumption	550mW @ 12V

Communication:

Output signal type	PWM
PWM rate	50Hz ± 2%
PWM voltage output	High range: 0.7 x Supply Voltage (max)
	Low Range: 1.2V (max)
PWM signal assignment	< 10% pulse width: Error
	10% pulse width: 350 ppm CO_2 equivalents
	50% pulse width: 1175 ppm CO_2 equivalents
	90% pulse width: 2000 ppm CO_2 equivalents
	> 90% pulse width: Error
First time startup	Power module continuously for six hours to achieve proper burn-in. Successful completion of burn-in will be marked in EEPROM".
First functional reading after startup	15 minutes

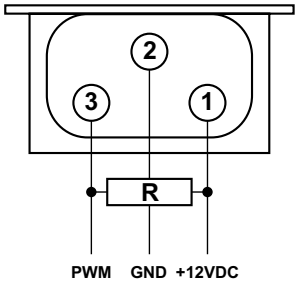
Environmental

Temperature range	0 to +40°C / -40 to +85°C
Humidity range	5 to 90% r.h., non-condensing

Mechanical

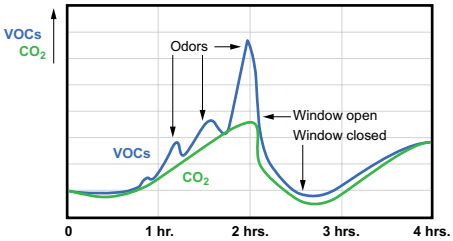
Dimensions (approximate)	29 x 56 x 14 mm (housing w/o fixture)
	19 x 31 mm (PCB)
Weight (approximate)	10 grams
IP-Class	67 (with housing)

Connector Pin Out



R = 1 kOhm pull- up resistor

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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