AppliedSensor

Air Classification Module (ACM)

ACM

Superior automotive cabin air quality

The AppliedSensor Air Classification Module (ACM) is a highly sensitive, stable solution for detecting traffic-related gases and preventing them from entering the automotive cabin. Easily mounted in the air intake of an automotive HVAC unit, the module tracks the presence of potentially harmful gases and ensures removal before passenger detection. The ACM uses MEMS (microelectromechanical systems) technology to accurately and reliably detect unhealthy and unpleasant gases such as nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOCs).

Rapid response and quantitative analysis

Compared to competing modules, the ACM has a very rapid response time of approximately one second. Together with the quantitative evaluation of gas concentrations, this ensures passenger exposure to gases is at the absolute minimum, even when driving through long tunnels or being stuck in traffic jams.

Smart algorithms

The module includes internal diagnostic validation, microprocessor-based signal conditioning, flexibility on output protocols and an output signal that classifies intake air quality. Based on smart software routines, it is even possible to apply city, inter city and country mode for dynamic traffic adaptation and optimum event detection.

Features and Benefits

- Quantitative CO/HC and NO_2 gas detection: small steps, also against slowly increasing background concentration
- Fast response time
- No need for airflow into the ACM
- Waterproof
- Very low sensor to sensor variation
- Both classification and ppm level output available
- Real event detection: false/no events minimized, no undesired cross sensitivity
- Proven automotive
- LIN and PWM output

Reliable

- Stable performance
- Long-term stability
- Ability to recover quickly from condensation

Robust Custom Packaging

- Flexible packaging, easy integration
- Resistance to chemical and physical contaminants

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Features

Configuration/Package

Package material	PA
Size	42.8 x 31.3 x 29.3 mm (outer dimensions)
Weight	<20 grams
Connector	MQS - 3 pin - code B
Output type	Open collector PWM or LIN
Environmental protection	P64 + IP67

Gas Detection Performance

Gas Detection Performance	CO	NO$_2$
Concentration range	0 to 200 ppm	0 to 2 ppm
Limit of detection	2 ppm	100 ppb
Response time	1 second	2 seconds

Operating Environment

Operating temperature range	-40 ºC to +85 ºC
Storage temperature range	-40 ºC to +85 ºC
Air velocity range	0.5 to 10 meters per second (m/s)

Electrical Characteristics

Supply voltage	9 to 16.5 VDC
Power consumption	<1 W typical

Typical Configurations