

ZMOD4410 Metal Oxide Gas Sensor for Indoor Air Quality

FEATURES

- Environmentally compensated heater driver control
- Dual output - detects wide range of TVOC from ppb to ppm concentrations and provides eCO₂ reading
- I²C interface: up to 400kHz
- Adjustable ADC resolution for optimal speed vs. resolution: 16-bit maximum
- Configurable alarm/interrupt output

BENEFITS

- Proven MOx material with 13 years of reliability data
- Each sensor module is electrically and chemically tested and calibrated
- IDT offers downloadable source files and compiled code, enabling a product road map of indoor air measurement innovation
- Only sensor provider to utilize third-party validation of IAQ rating to help assess levels of clean air and recommend actions



Indoor Air Quality

IDT's ZMOD4410 gas sensor platform provides best-in-class stability and sensitivity and is designed to identify trace gases in various locations within indoor environments.

These air quality sensors feature a miniature package, integrated ASIC, and MEMS sensing element that is comprised of a controlled heater and proven metal oxide (MOx) material. Constant temperature operation or a very precisely regulated variation of the heater temperature allows the detection of a wide range of indoor air contaminants by accurately measuring the sensor conductivity and resistance.

This flexibility makes the sensors in the ZMOD4410 platform capable of providing a variety of measurement options by varying the method of operation or changing the firmware

used to interpret the resistance measurements. Downloadable libraries and source code provided by IDT make upgrades straightforward to implement. All sensors are electrically and chemically (gas) tested with calibration data stored in the built-in nonvolatile memory (NVM).

The ZMOD4410 platform focuses on detection, control and rating of Indoor Air Quality (IAQ). The indoor air quality rating is based on TVOC concentrations defined by the German Environment Agency (UBA) as the main source for unpleasant air in an indoor environment. By detecting TVOC and rating the IAQ, the ZMOD4410 helps systems address clean air in the ambient environment. Additional downloadable algorithms are available to estimate levels of CO₂ and control ventilation systems.

ZMOD4410 Gas Sensor for Indoor Air Quality

RECOMMENDED APPLICATIONS

- Monitor home, office and personal environment for healthy conditions and comfort
- Smart appliances that control or monitor indoor air quality
- Automation based on indoor ambient air quality

PRODUCT SUPPORT

- Evaluation kits
- Manuals, videos, application notes, programming examples and blog posts
- Third-party certification for compliance with standard defined by the German Environment Agency (UBA)
- Engineering support for sensor implementation

PHYSICAL CHARACTERISTICS

- Power consumption
 - <1mW in low power operation
 - <23mW in continuous operation
- -40°C to +65°C operating temperature range
- 1.7 to 3.6 V supply voltage
- 3.0 x 3.0 x 0.7 mm 12-LGA package

The ZMOD4410 uses the German Environment Agency (UBA) study as a basis to define clean air. Sensors are calibrated to this definition to ensure customer satisfaction.

Indoor Air Quality Ratings

IDT IAQ Rating	Reference Level*	Air Information	TVOC (mg/m ³)	Air Quality
≤ 1.99	Level 1	Clean Hygienic Air (Target Value)	< 0.3	Very Good
2.00 - 2.99	Level 2	Good Air Quality (if no threshold is exceeded)	0.3 - 1.0	Good
3.00 - 3.99	Level 3	Noticeable Comfort Concerns (Not recommended for exposure > 12 months)	1.0 - 3.0	Medium
4.00 - 4.99	Level 4	Significant Comfort Issues (Not recommended for exposure > 1 months)	3.0 - 10.0	Poor
≥ 5.00	Level 5	Unacceptable conditions (Not recommended)	> 10.0	Bad

* Based on a study by the German Environment Agency (UBA).

ZMOD4410 Firmware

IAQ Firmware	Application
ZMOD4410-IAQ & eCO ₂	Bedroom, office, UBA standard
ZMOD4410AI1V-LP	Low power battery
ZMOD4410AI1V-Odors	Fan control

To request samples, download documentation or learn more visit: idt.com/ZMOD4410

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