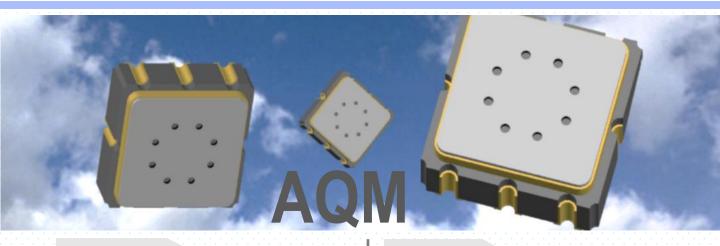
iS-AQM-E24 Indoor Air Quality Sensor Module Datasheet





General Description

Based on MEMS gas sensor, the iS-AQM-E24 sensor module is used to measure VOCs levels, temperature and humidity, it also provides CO₂, HCHO equivalent predictions. The data is available via I²C bus or UART series port.

The MEMS gas sensor can be protected by covering a PTFE filter membrane. The sensor module can be assembled by plug board or SMT connection.

The benefits and features of the module are listed below:

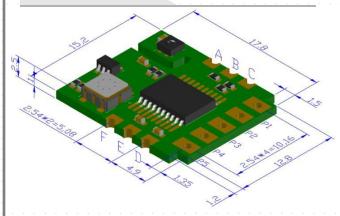
- Reliable evaluation of indoor air quality, temperature and humidity
- > Built-in Temp. and Humi. Compensation,
- High sensitivity and fast response
- Low power consumption
- Small size for convenient installation
- > Automatic baseline correction
- > The baseline resettable, the storage status settable
- > Robust design, excellent long-term stability
- Highly flexible assembly mode and communication interface

Performance parameter

Revised: 2023/02/13

| Item | Remark | |
|------------------|--|--|
| Sens. Principle | MEMS metal oxide sensor | |
| Sensing range | 400-5000 ppm CO ₂ equivalents 0-50000 ug/m³ TVOC equivalents 0-2000 ug/m³ HCHO equivalents Temp:-40~125 °C Humi::0~100%RH | |
| Warm-up time | 3 min. | |
| Communication | I ² C or UART | |
| Calibration | Automatic baseline correction Baseline resettable, the storage status settable(not stored by default) | |

Product Outline



UNIT: mm

A: +3.3V B: NA C: SDA D: GND E: SCL F: NA

Pitch: 2.54mm

P1: NC P2: RX P3:TX P4:+3.3V P5:GND

Pitch: 2.54mm

Remark:

 I^2 C interface needs 4.7-10kΩ pull-up res.

Electrical Characteristics

| Item | Specification | |
|----------|----------------------------------|--|
| Voltage | $3.3V\pm0.1V$, max. 20mV ripple | |
| Power | Max. 66mW @3.3VDC (20mA) | |
| Interval | 1 Sec. / measurement | |

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Communication

UART Series port

| Item | Specification | | |
|------------|--|--|--|
| Baud rate | 9600 bits/s | | |
| Data bit | 8 | | |
| Parity bit | None | | |
| Stop bit | 1 | | |
| Protocol | Master send 0xFF 52 01 01 AC to reset baseline to current value. Master send 0xFF 67 01 01 97 to automatic upload data packet once per Sec Send 0xFF 67 00 00 99 to restore to query mode. Master send 0xFF 61 02 01 9C in query mode to acquire 13 bytes data packet. | | |

I2C bus

| Item | Specification | |
|--|---|--|
| Frequency | Standard Mode:100kbits/s | |
| Slave Addr. | 0xA2 (7 bit addr. mode, shift left by 0x51) | |
| Do Read Acquire 13 bytes data packet by read operation | | |
| Do Write Reset baseline to current value by write 0xFF 52 01 01 AC operation | | |

Data Packet

Revised: 2023/02/13

| Byte | Name | Description |
|-------|------------------------|--|
| 0 | Packet Head | 0xFF |
| 1-2 | eCO ₂ [ppm] | Data[1]*28+Data[2] |
| 3 | Status | 0x00: OK 0x01: Heating 0x02: Error |
| 4-5 | Temperature[℃] | (Data[4]*2 ⁸ +Data[5] -669)/10 |
| 6-7 | Humidity [%RH] | (Data[6]*2 ⁸ +Data[7] -125)/10 |
| 8-9 | TVOC [ug/m³] | Data[8]*28+Data[9] |
| 10-11 | HCHO [ug/m³] | Data[10]*28+Data[11] |
| 12 | Check Code | ~(Sum(D[1]:D[11]))+1 |

Environmental Specifications

| Item | Specification |
|--------------------|-------------------------------|
| Operating Temp. | -10 ~ +60 ℃ |
| Operating Humidity | 5 ~95 % RH, non-condensing |
| Storage Temp. | -40 ~ 85 ℃ |
| Storage Humidity | 5 ~95 % RH, non-condensing |

Attentions

Please read the following terms carefully to avoid product data errors and prevent product damage.

- 1, The gas sensor must be reflow soldering in neutral atmosphere. The welding furnace should have sufficient flow of clean air to maintain the air clean. The maximum temperature is 260 °C. Manual soldering conditions are recommended for a maximum temperature of 350 °C for 5 seconds. . it is recommended that it should be aged for more than 4 hours to eliminate the influence of welding process on the gas sensor.
- 2, The products should not be exposed to high concentrations of organic solvent vapor, silicone vapor, in order to prevent sensitive material poisoning. The products should be placed in the filter protected space to prevent water and dust. The installation direction can be used to prevent dust deposition.
- 3, The sensor resistance will experience a continuous increase after power on. The time span of this process depends on the sensor heat history and storage environment. The longer time is needed when off time is long. It is recommended to preheat at least 60 min. to get a reliable results.
- It is recommended to use ESD protection equipment when handling the products.
- When a specific kind of gas needs to be measured, the chip operating temperature can be set to achieve better selectivity. Please consult for more information.
- Temperature and humidity specification: please refer to Sensirion SHTC3 sensor for detail information.

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