TELAIRE®

MiCS-VZ-89TE

Integrated sensor board for indoor air quality monitoring

The MiCS-VZ-89TE combines state-of-the-art MOS sensor technology with intelligent detection algorithms to monitor tVOCs and CO_2 equivalent variations in confined spaces, e.g. meeting rooms or vehicle cabins.

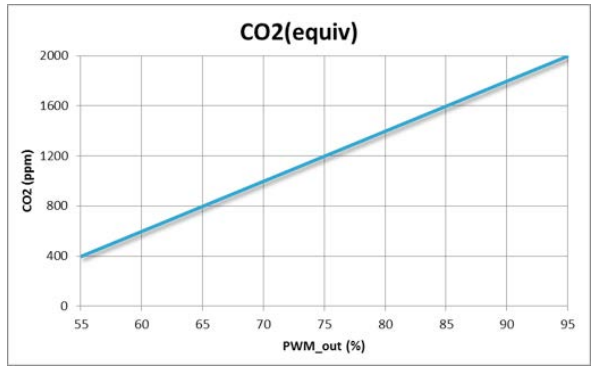
The dual signal output can be used to control ventilation on-demand, saving energy and reducing cost-of-ownership.

Features

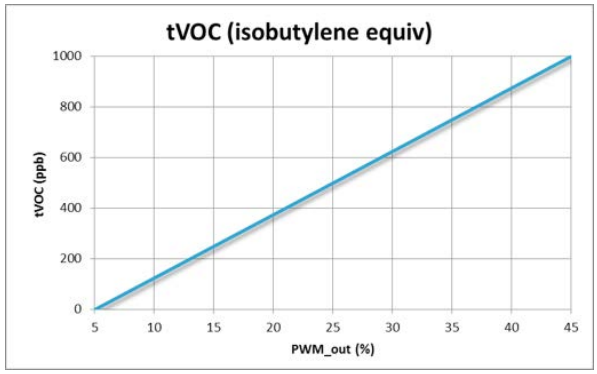
- Calibration-free
- Low power
- Wide VOCs detection range
- High sensitivity
- High resistance to shocks and vibrations

Detectable Gases

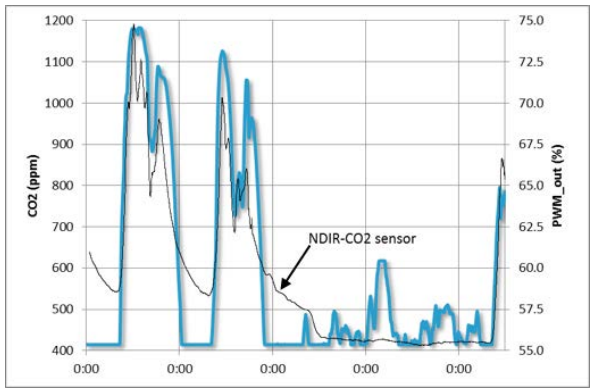
- Volatile Organic Compounds: VOCs
- Equivalent Carbon Dioxide: CO_2(equivalent)



Conversion from PWM output signal of MICS-VZ-89TE to equivalent Carbon Dioxide concentration in ppm



Conversion from PWM output signal of MICS-VZ-89TE to equivalent tVOC concentration in ppb



Conversion from PWM output signal of MICS-VZ-89TE to equivalent tVOC concentration in ppb

Amphenol

Advanced Sensors

MiCS-VZ-89TE Specifications

Performance	
Detection Method	Semiconductor gas sensor, detecting a wide range of VOCs
Monitoring Range	400-2000 ppm equivalent CO_2 0-1000 ppb isobutylene equivalent tVOCs
PWM Output	Pin 1 : TTL output 30Hz +/-1%, Range 5…95%, duty cycle @ 3.3V Use a pull-up resistance between Pin 1 and Pin 6 Pull-up value: typ. 10kOhms
I^2C Output	Pin 2 and 4 ; Pull-up of 4.7 kOhms on master SDA and SCL
Response Time	Equivalent to conventional NDIR-CO2 sensors < 5 seconds for tVOC
Refresh Output Frequency	1 Hz

Operation	
Supply Voltage	3.3V DC regulated +/- 5%
Operating Power	125 mW
Warm-up Time	15 min
Operating Temperature	0°C to 50°C
Operating Humidity	0%RH to 95%RH (non condensing)
Storage Temperature	-40°C to 80°C
Storage Humidity	0%RH to 95%RH (non condensing)
Lifetime (indoor application)	Expected >5 years [(1)]

Note: [(1)] Exposure to silicon based materials will seriously shorten the life time of this sensor.

IMPORTANT PRECAUTIONS

Read the following instructions carefully before using the indoor air quality sensor described in this document to avoid erroneous readings and to prevent the device from permanent damage.

- The sensor must not be exposed to high concentrations of organic solvents, ammonia, silicone vapor or cigarette-smoke in order to avoid poisoning the sensitive layer.
- The sensor should be protected against water and dust projections.
- Telaire strongly recommends using ESD protection equipment to handle the sensor.

MiCS-VZ-89TE Specifications

MiCS-VZ-89TE - Power-On Self-Test

Parameter	Criteria	Failed Diagnostic Indicator
Sensor Resistance Range	Range Check	PWM < 5 % at Power ON
Sensor Operating Power	Range Check	PWM < 5 % at Power ON

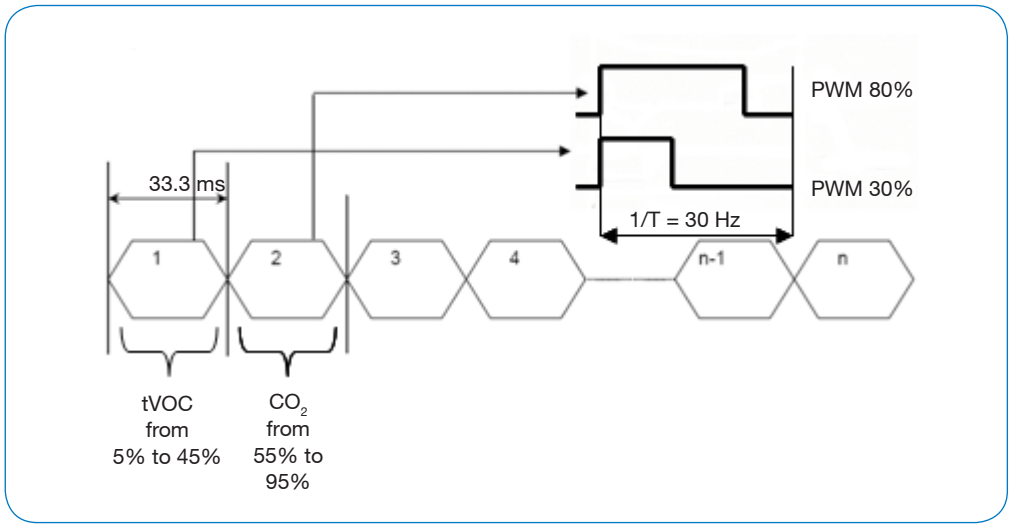
MiCS-VZ-89TE - PWM Output

After Power-on self-test (2 seconds) , the device will provide either a single “Failed Diagnostic Level” in case of sensor failure of the sensor or PWM multiplexed output indicating “CO_ equivalent_ Level” and “tVOC _isobutylene_equivalent Level” referred to the isobutylene sensitivity unit.

A simple method to test the reactivity and sensitivity of the MiCS-VZ-89TE VOC gas sensor is to expose the sensor to the bottleneck of a container of alcohol for example.

CO_2 epu [ppm]	PWM Output [1%]
400	55
1027	70.7
1654	86.4
2000	95

tVOC (isobutylene) [ppb]	PWM Output [%]
0	5
200	13
500	25
1000	45



MiCS-VZ-89TE Specifications

MiCS-VZ-89TE - Output

Out of this initial period, the device will have the I²C data CO_2 equivalent [ppm] and tVOC equivalent referred to the isobutylene sensitivity unit [ppb]. For more information refer to I²C Application Note.

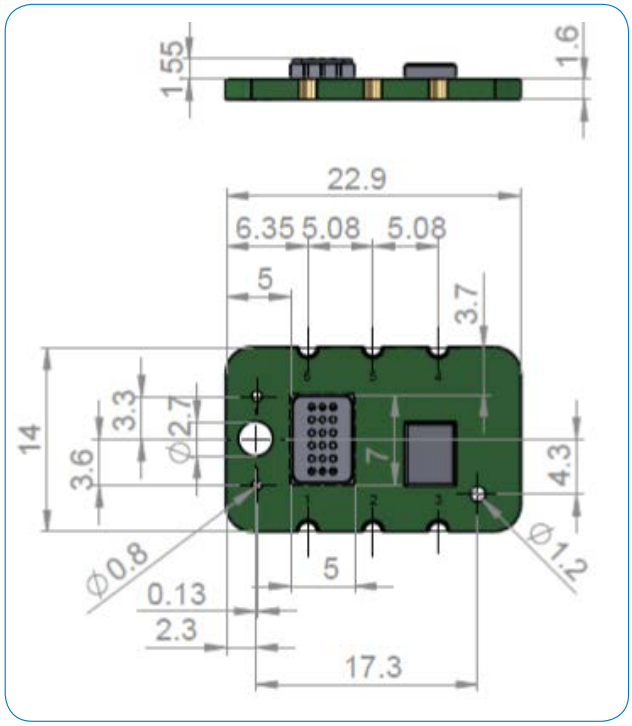
- D1: Data_byte_1: tVOC-signal level value
- D2: Data_byte_2: CO_2-equivalent signal level value
- D3: Data_byte_3: Raw sensor value MSB
- D4: Data_byte_4: Raw sensor value
- D5: Data_byte_5: Raw sensor value LSB
- D6: Data_byte_6: Error status byte
- D7: Data_byte_7: DRC

Package Outline Dimensions

The MiCS-VZ-89TE is available as PCB and can be mounted with a M2.5 screw in appliances.

Connections are made with soldering on card edge (cut via connector).

Pin Connection VZ-23TE		
6: + 3.3V	5: NC	4: SDA
1: PWM OUT	2: SCL	3: GND



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