The MiCS-VZ-86/89 is an integrated sensor board for Indoor Air Quality monitoring.

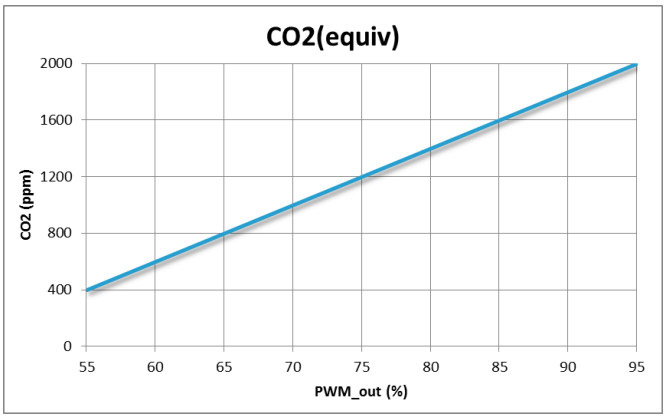
The MiCS-VZ-86/89 combines state-of-the-art MOS sensor technology with intelligent detection algorithms to monitor VOCs and CO2 equivalent variations in confined spaces, e.g. meeting rooms or vehicle cabins. The dual signal output can be used to control ventilation on-demand, saving energy and reducing cost-of-ownership.

Features

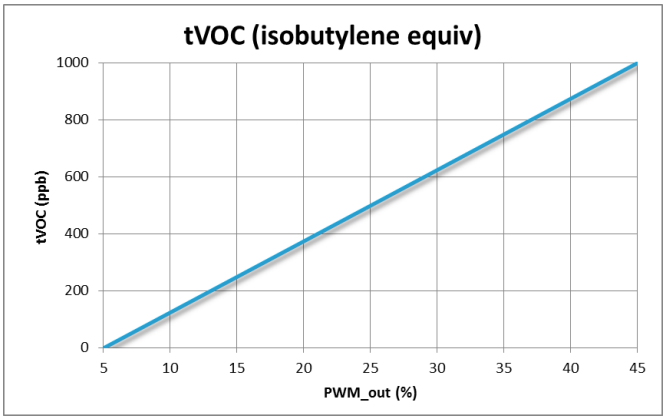
- Calibration-free
- Low power
- Wide VOCs detection range
- High sensitivity
- High resistance to shocks and vibrations

Detectable gases

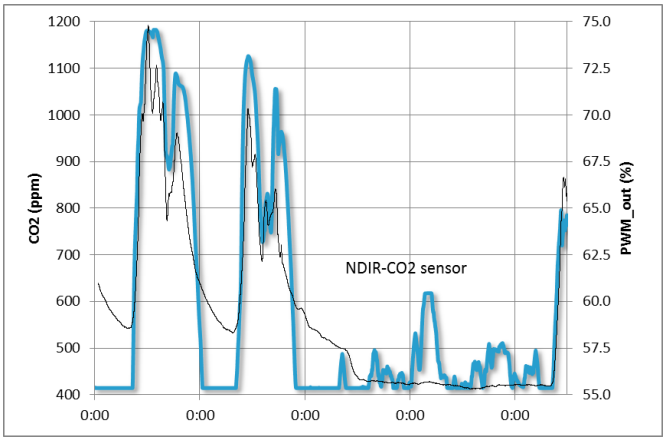
• Volatile Organic Compounds	VOCs
• equivalent Carbon Dioxide	CO_2(equiv)



Conversion from PWM output signal of MICS-VZ-86 to equivalent Carbon Dioxide concentration in ppm



Conversion from PWM output signal of MICS-VZ-86 to equivalent tVOC concentration in ppb



Comparison between MICS-VZ-86 output signal and NDIR CO2 sensor signal over a duration of 4 consecutive days (Thu – Sun)

For more information please contact:

info.em@sgxsensortech.com

SGX Sensortech, Courtils 1
CH-2035 Corcelles-Cormondrèche
Switzerland

www.sgxsensortech.com

Performance

Detection Method	Semiconductor gas sensor, detecting a wide range of VOCs
Monitoring Range	400-2000 ppm equivalent CO2 0-1000 ppb isobutylene equivalent tVOCs
PWM Output (VZ-86)	Pin 1 : TTL output 30Hz, Range 5…95%, duty cycle 5V
I2C Output (VZ-89)	Pin 2 and 4 ; see VZ I2C SPEC rev A for details of operation
Response Time	Equivalent to conventional NDIR-CO2 sensors < 5 seconds for tVOC
Refresh Output Frequency	1 Hz

Operation

Supply Voltage	5V DC, regulated +/- 0.25V for F version 3.3V DC regulated +/- 0.25V for T version
Operating Power	150 mW
Warm-up Time	15 min
Operating Temperature	0 ℃ to 50 ℃
Operating Humidity	0%RH to 95%RH (non condensing)
Storage Temperature	-40 ℃ to 80 ℃
Storage Humidity	0%RH to 95%RH (non condensing)

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 vapour or cigarette-smoke in order to avoid poisoning the sensitive layer.
•The sensor should be protected against water and dust projections.
•SGX strongly recommends using ESD protection equipment to handle the sensor.
•For any additional questions, contact SGX Sensortech

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-86 Output

After Power-on self-test (2 seconds) , the device is in "Functional Test Mode" for 60 seconds. During this period the device can be exposed to a test gas in order to check the reactivity and sensitivity of gas sensor (exposure to alcohol bottleneck is an example of check method).

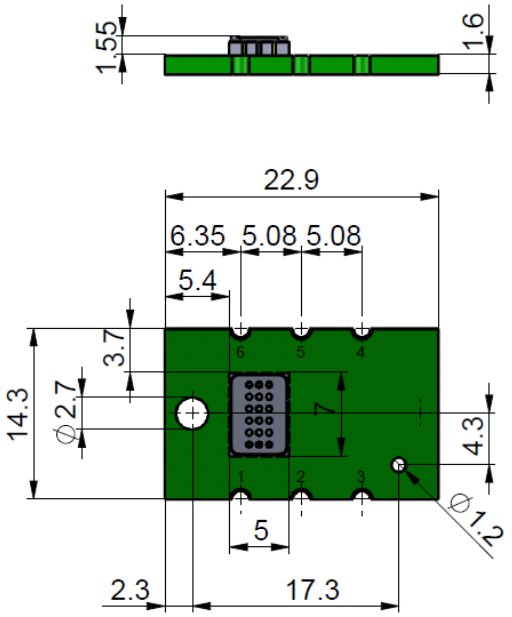
Out of this initial period, the device will have the PWM multiplexed output indicating CO2 equivalent Air Quality Level and tVOC equivalent referred to the isobutylene unit.

CO2 equ [ppm]	PWM Output [%]
400	55
1027	70.7
1654	86.4
2000	95

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

Package outline dimensions

The MiCS-VZ-86/89 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-86

6:+5V/3.3V for T version	5: NC	4: NC
1: PWM OUT VZ-86	2: NC	3: GND

Pin Connection VZ-89

6:+ 5V/3.3V for T version	5: NC	4: SDA
1: NC	2: SCL	3: GND

Product nomenclature

MICS-VZ-86T	3.3V operation with PWM output
MICS-VZ-86F	5V operation with PWM output
MICS-VZ-89T	3.3V operation with I2C output
MICS-VZ-89F	5V operation with I2C output

For more information please contact:

info.em@sgxsensortech.com

SGX Sensortech, Courtils 1
CH-2035 Corcelles-Cormondrèche
Switzerland

www.sgxsensortech.com