# Air Quality Sensor

## Quick Start Guide

**ET | EUROTRONIC Technology GmbH**

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**Made in Germany**

## MEANING OF THE COLOURED LEDS

| Colour | $CO_2$ in ppm | VOC in ppb | Air Quality | Recommendations |
|---|---|---|---|---|
| Dark red | > 3000 | > 2200 | unacceptable | It must be ventilated immediately. Use room only when unavoidable. |
| Bright red | 1800-3000 (acoustic signal starts) | 1600-2200 | low | Increased ventilation is absolutely necessary. |
| Orange | 1000-1800 | 1000-1600 | medium | Ventilation is necessary. Check and improve ventilation behaviour. |
| Yellow | 600-1000 | 500 - 1000 | good | No relevant concerns. Regular ventilation is recommended. |
| Green | 0 - 600 | 0 - 500 | very good | No concerns. No action necessary. |

## NOTE

If the $CO_2$ value does not improve, the acoustic signal sounds again.
The VOC value is only displayed visually (without an acoustic signal).

## ACTIVATE / DEACTIVATE ACOUSTIC SIGNAL

To permanently deactivate the acoustic signal for $CO_2$, keep the button on the back of the device pressed for 30 seconds. After successful deactivation of the acoustic signal, the LEDs of the two bars run down once. By pressing the button again for 30 seconds, the acoustic signal can be reactivated at any time. After the acoustic signal has been successfully activated, the LEDs of the two bars go up once.

## TECHNICAL SPECIFICATION

| Article | Air Quality Sensor |
|---|---|
| EAN | 4260012712148 |
| Article Number | 700209 |
| Supply Voltage | Plug-in power supply, Output: 5.0V DC 1.0A, 5W |
| Sensor Type | MOS VOC / CO2-eq |
| Current Consumption | 0,25 - 0,4 W |
| Measuring Range | $CO_2$-eq: 0 - 3.000 ppm, VOC: 0 - 2.200 ppb |
| Dimensions | 68 x 68 x 17 mm |
| Weight | 48 g |
| Degree of protection | IP20 |
| Degree of pollution | 2 |

Technical modifications are subject to change. All descriptions for compatibility are without engagement.

## LEGAL NOTICE

**Environmental Protection:**
From the date of implementation of European guidelines 2012/19/EU into national law, the following applies: Electric and electronic devices may not be disposed of in house-hold waste. The consumer is obliged to return electric and electronic devices to the public collection points established for them or to the point of sale. Details are regulated by the respective national law.

**Dispose of Packaging:**
Dispose of the packaging sorted by type. Add paperboard and cardboard to the waste paper, foils to the recyclables collection.
The symbols on the product, the instruction manual or the packaging refer to these regulations. By recycling, material utilisation or other forms of utilisation of old devices, you make an important contribution to the protection of our environement.

**Delaration of conformity:**
CE Hereby, Eurotronic Techology GmbH declares that the Air Quality Sensor is in compliance with Directive 2014/53/EU. The full text of the EU declaration of confirmity is available at the following internet address: https://eurotronic.org.org/service/downloads/.

**Warranty:**
The 24-months warranty period begins at the day of purchase. Please keep the receipt as evidence of purchase. During the warranty period, defective products may be sent to your dealer or the address above. Please ensure sufficient postage is paid. A new or repaired device will then be sent to you free of charge. No new warranty period begins with the repair or replacement of the device.
After the warranty period has expired, you also have the option of sending the defective device to the specified address with sufficient postage for repair. Repairs after the warranty period have expired are subject to a charge. Your statutory rights are not limited by this warranty.

## WARNING AND SAFETY INSTRUCTIONS

**Safety Instructions**
- The Air Quality Sensor is designed for use in buildings.
- Operate the Air Quality Sensor only as described in the user manual.
- The Air Quality Sensor should only be put to use in a dry and dust-free place, away from direct sunlight.
- Do not keep using the device when there is obvious damage.
- The Air Quality Sensor may not be rebuilt, modified or opened.
- The Air Quality Sensor is not to be used as a gas measuring instrument.

**WARNING! RISK OF INJURY!**
When children play with the thermostat or packaging, they might swallow small parts and suffocate.
Do not let children play with the thermostat or packaging.

## PRODUCT DESCRIPTION

By means of a complex algorithm, an air quality value based on $CO_2$-equivalent is determined from a sum signal of all determined gases and is displayed as a clear traffic light according to a WHO-compliant scale. While a „very good room air" (<600 ppm) is indicated by means of a green LED, a red LED warns, if a room needs to be ventilated urgently.
In addition, the modern metal oxide sensor also measures the VOC value, interprets it and displays the value as a traffic light. VOC stands for the English term „volatile organic compounds". They are gaseous or vaporous substances that contain carbon. Volatile organic compounds are found for example in cleaning products, disinfectants, care products (e.g. deodorant or perfume) and building materials (e.g. paints and varnishes).
This only makes the product an „air quality sensor" and signals poor air quality even where simple $CO_2$-sensors fail.

## COMMISSIONING

Connect the micro-USB-cable to the plug-in power supply (Output: 5.0V DC 1.0A, 5W) and to the Air Quality Sensor and afterwards to a power outlet. For optimal performance please use the products which are part of the delivery scope.

When the unit is switched on, the Air Quality Sensor is doing a self-test:
- Self-test: Both LED bars run simultaneously two times from the bottom to the top
- Sensor-check: each LED bar is blinking two times
- Buzzer-test: 3 short clicks of the buzzer

## IMPORTANT NOTE:

When using the air quality sensor, make sure that the sensor is not disconnected from the power supply, because the first 12 hours of operation the sensor learns your corresponding room profile and also resulting air quality variations via a self-calibrating algorithm.
After these 12 hours, the sensor guarantees you precise measurement results.
If the power supply is interrupted, this calibration process starts again.
Please also make sure that the room, in which the air quality sensor is operated, is ventilated vigorously at least once a week.
This is important for the learning algorithm of the sensor.

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> This information sheet is not a substitute for the installation and operation guide. Please read the installation and operation guide carefully before using the product.

## Differences VOC and $CO_2$ measurement

When it comes to indoor chemicals, the focus is often on volatile organic compounds. In professional circles, these are called VOCs.

**VOC sources and composition**
There are numerous sources of VOC indoors, for example building materials (paints, floor coverings, adhesives) and furnishings (textiles, furniture, printers, etc.) as well as cleaning agents, perfumes, candle and cigarette smoke.
The indoor air concentration depends in particular on the type of materials, e.g. solvent content, formation of degradation products, volatility, on their age and storage, and on the indoor climate, e.g. air changes and temperature.
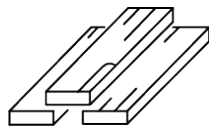
**Impacts on health**
Effects of individual volatile compounds on human health and well-being range from olfactory perception at low concentrations to toxic effects. These usually occur only at high concentrations. Certain compounds, such as benzene, are even carcinogenic. Mixtures of VOC can cause various non-specific effects at low concentrations. Examples: Irritation of the mucous membranes of the eyes, nose and respiratory tract, headaches, fatigue, lack of concentration, nausea or increased body temperature.

## VOC sensors compared to simple $CO_2$ sensors

Air quality measurement using $CO_2$ sensors is „en vogue". Yet it often misses the mark, because $CO_2$ sensors do not react at all to bad odors or VOCs. The sun shines through the window onto the carpet, which then emits volatile organic compounds (VOCs) that pollute the indoor air. The $CO_2$ sensor, which is supposed to measure the quality of the indoor air, does not notice anything. It would also fail for other air contaminants, such as kitchen odors or human exhalations. A realistic determination of the indoor air quality is therefore not possible with a simple $CO_2$ sensor in many cases.

A simple $CO_2$ sensor does take into account the number of people and the type of room use, but it is only through the use of a VOC air quality sensor that the real ventilation requirement is revealed. VOC sensors therefore measure much more in line with demand, but in the past this type of sensor was far too expensive for widespread use in buildings.
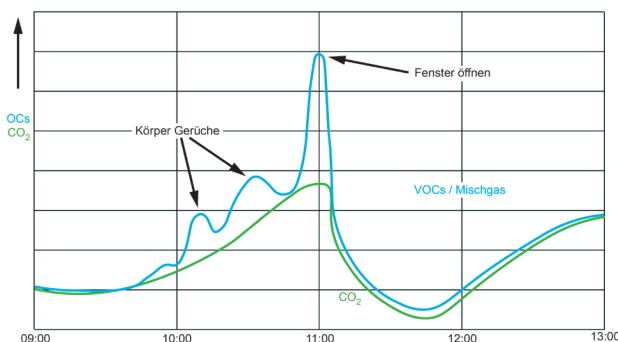
Human generated $CO_2$ always has a proportional amount of VOCs. $CO_2$ sensors (bottom graph) do not react to odors, cigarette smoke and other air pollution in the room. VOC sensors (upper graph) therefore measure much more in line with demand.
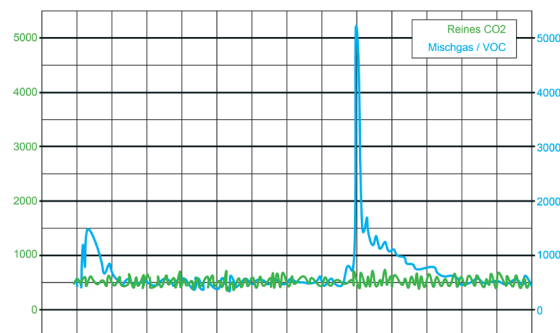
Application in a toilet. While the $CO_2$ sensor signals „good" air, the VOC mixed gas sensor (graph with peak) knows better.

## Our quality standard

Due to the above information, we use a modern semiconductor sensor in our air quality sensor, with which an air quality value in $CO_2$ equivalent is determined from a sum signal of all detected gases by a complex algorithm. Our goal is to be able to signal poor air quality even where simple $CO_2$ sensors drop out.

Thanks to the reliable information provided by the Eurotronic Air Quality Sensor, you can now create healthier conditions for people indoors.