

## Visual CO2

Visual CO2 is a signaling device for the level of CO2 concentration in the air, using three light indicators. It also has temperature and humidity measurement that can be viewed through a mobile application.

The design of the device generates a flow of air throughout the interior of the beacon due to natural convection. The ambient air is captured through three holes located in the lower part, and circulates all the way across the interior until it exits through a regulating valve located in the upper part.

Inside the base is the CO2 sensor that, using NDIR infrared absorption technology, allows the concentration in parts per million to be measured very precisely according to the amount of infrared light absorbed by the CO2 particles present in the air..

A microcontroller manages the sensor signals and controls the beacon lighting based on CO2 concentration levels.

These thresholds have been defined based on recent studies by various international organizations that relate the concentration of CO2 with the risk of transmission of COVID19.



Controlling the CO2 level allows, in addition to improving people's comfort and health, optimizing energy consumption related to heating and cooling systems.

The device also measures ambient temperature and humidity, and has a wireless communication system that allows it to be connected to any mobile device that has the Sensirion MyAmbience APP installed, which can be downloaded for free.

The thresholds are established as follows:

Range (CO2 ppm)	LEDs	
CO2 < 800	Green	●
800 < CO2 < 1000	Green + Yellow	● + ●
1000 < CO2 < 1300	Yellow	●
1400 < CO2 < 1600	Yellow + Red	● + ●
1600 < CO2 < 1800	Red	●
CO2 > 1800	Red slow flashing	● ● ● ● ● ● ● ●
CO2 > 2000	Red fast flashing	● ● ● ● ● ● ● ●

## Installation

The Visual CO2 device must always be installed in a vertical position. The area of the room must ensure that it does not interfere with the natural flow of air around it. Follow the recommendations below to obtain a reliable measurement of the CO2 level of the room:

- Height between 80 and 160 cm.
- Avoid airflow obstructions (corners and corners, behind objects, curtains, doors, etc.)
- Also avoid direct air flows (open windows and doors, air conditioners and fans)
- Keep a distance of 1.5m from the nearest workstation.
- Place it on a flat and stable surface. It can be screwed if necessary.

Connect the power adapter from the power supply to the beacon. Then the plug from the power supply to a 230V AC mains socket.

It is ready to be used.

## Operation and calibration modes

The device has three modes of operation: reading mode, manual calibration mode and auto calibration mode.

The selection of the operating mode is done by pressing a small button located inside the beacon, accessible from one of the holes in the base.

The first time the beacon is turned on, the operating mode will be auto calibration, and the device will start to function and measure normally.

### Auto calibration mode

In this mode, the device operates as in reading mode, showing the ambient CO2 level with the indicator lights and sending the values wirelessly. But simultaneously it is performing a calibration function in the background.

This self-calibration function requires:

- That the equipment is connected uninterruptedly for 7 days
- That during that time it is exposed to at least 1 hour a day to a clean environment \* that ensures CO2 values lower than 500 ppm

Once this time has elapsed, the device will be self-calibrating and will automatically go into reading mode.

### Reading mode

The beacon shows the level of CO2 present in the environment with the light indicators.

Wirelessly communicate CO2, temperature and relative humidity values.

### Manual calibration mode

If the necessary requirements described for auto calibration cannot be guaranteed, or if an unusual deviation in the measurements is observed at any time, a manual calibration can be performed.

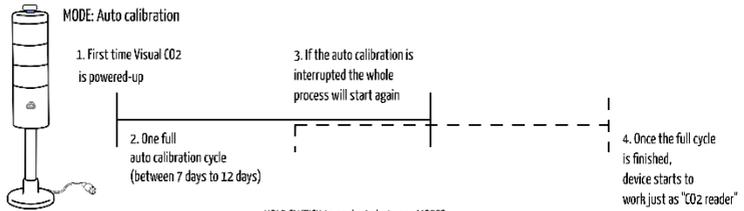
To do this, the device must be placed in an area with a clean environment \*. Then keep the button pressed for between 4 and 10 seconds. Wait 5 minutes, until a light indication shows the end of the process. Then the device will be calibrated and automatically goes into reading mode.

The self-calibration mode can be activated at any time by pressing the button for 10-20 seconds.

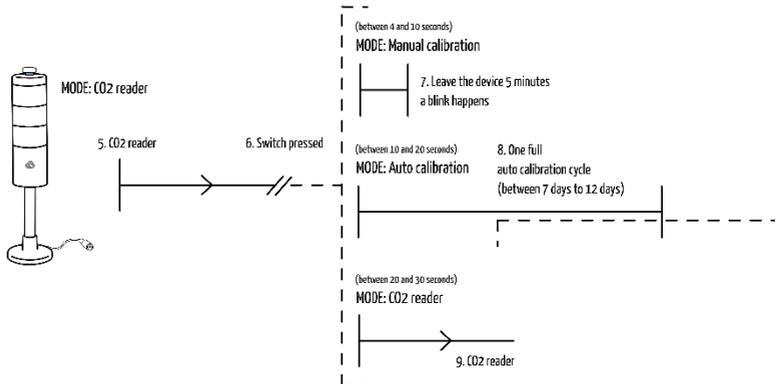
	<p>Under normal circumstances, you do not need to do anything other than connect the device to the power.</p> <p>Only if you want the highest precision, or if you notice any significant deviation in the measurements, you can proceed with one of the two calibration modes described.</p>
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\* A clean environment is considered to be an outdoor area, away from people and with low environmental pollution (from traffic or industries) in which CO2 values between 400 and 450 ppm background are assumed.

## First connection



## Regular operation



## Technical specifications

### CONNECTION

Power	1.75	W
Voltage	24	VDC
Range	±10%	
Current	70	mA

### MOUNTING

Ambient	Indoor
Position	Vertical
Protection index	IP23

### OPERATION RANGES

Temperature	-0 ÷ 50	°C
Humidity	0 ÷ 90	% relative humidity
Size	525 x Ø94	mm
Weight	1.25	Kg

### Especificaciones del sensor de CO2

Parameter	Condition	Value
Range	-	0 – 40.000
Accuracy	400 – 10.000 ppm	± (30 ppm + 3 % MV)
Repeatability	400 – 10.000 ppm	± 10 ppm
Thermal stability	T = 0 – 50 °C	± 2.5 ppm / °C
Response time	τ63%	20 s

### Temperature Sensor Specifications

Parameter	Condition	Value
Range	-	-40°C – 70°C
Accuracy	0 – 50 °C	± (2 °C + 0.023 x (T [°C] – 25 °C))
Repeatability	-	± 0.1 °C

### Humidity sensor specifications

Parameter	Condition	Value
Range	-	0 - 100 %RH
Accuracy	25 °C, 0 – 100%RH	± 7.5 %RH
Repeatability	-	± 0.1 %RH

## Visualization app

The device has a wireless communication system that allows it to be connected to any mobile device to view the CO<sub>2</sub>, Temperature and Humidity values.

The app is called Sensirion MyAmbience and can be downloaded for free for both Android and IOS.

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You can get further help from NIHON KASETSU EUROPE Customer Service:

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## More information

Scan this code to get more information on international studies on CO<sub>2</sub> and COVID, download the app and much more:

