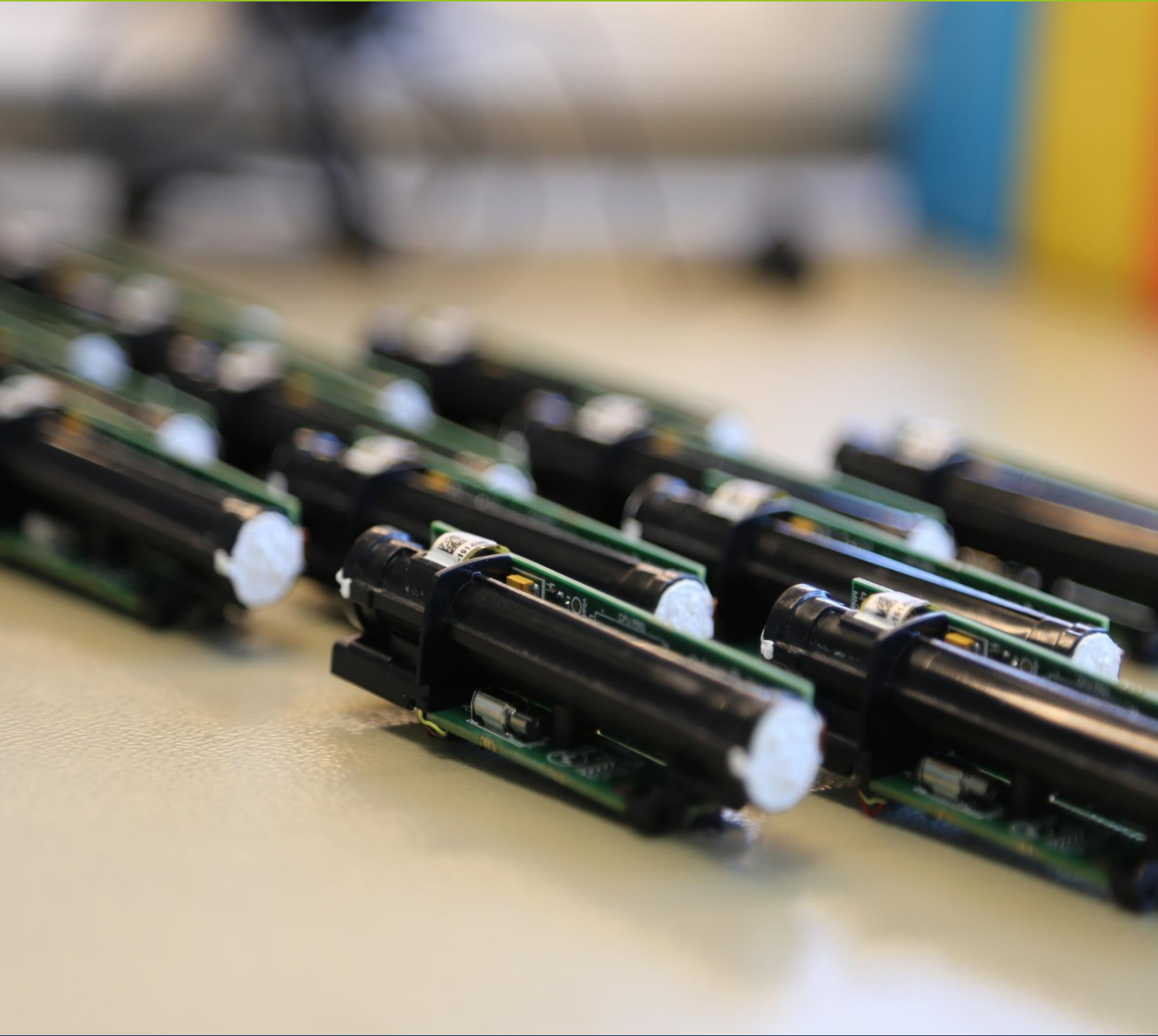


OCIEngine

A Miniaturized Non-Dispersive Infrared Spectroscopy Sensor
dedicated to breath analysis



www.olythe.io

+33 (0)4 42 52 62 39

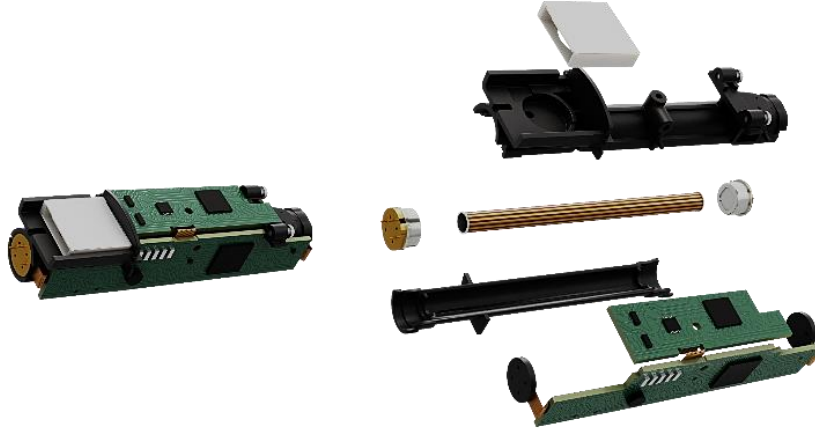
240 rue Louis de Broglie, 13100, Aix-en-Provence, France

Introduction

Expert in breath analysis, Olythe developed OCIEngine an infrared spectrometer to measure Volatile Organic Compounds (VOC) in the human breath. This sensor is specific to analyze a particular molecule such as ethyl alcohol molecules.

The measuring chamber of the sensor is crossed by infrared radiation. When the exhaled air is introduced into this chamber, the molecules of interest absorb a part of the radiation, which reduces the intensity of the optical signal. The concentration of the gas can therefore be deduced according to Beer-Lambert's physical law.

OCIEngine overview



Alcohol detection

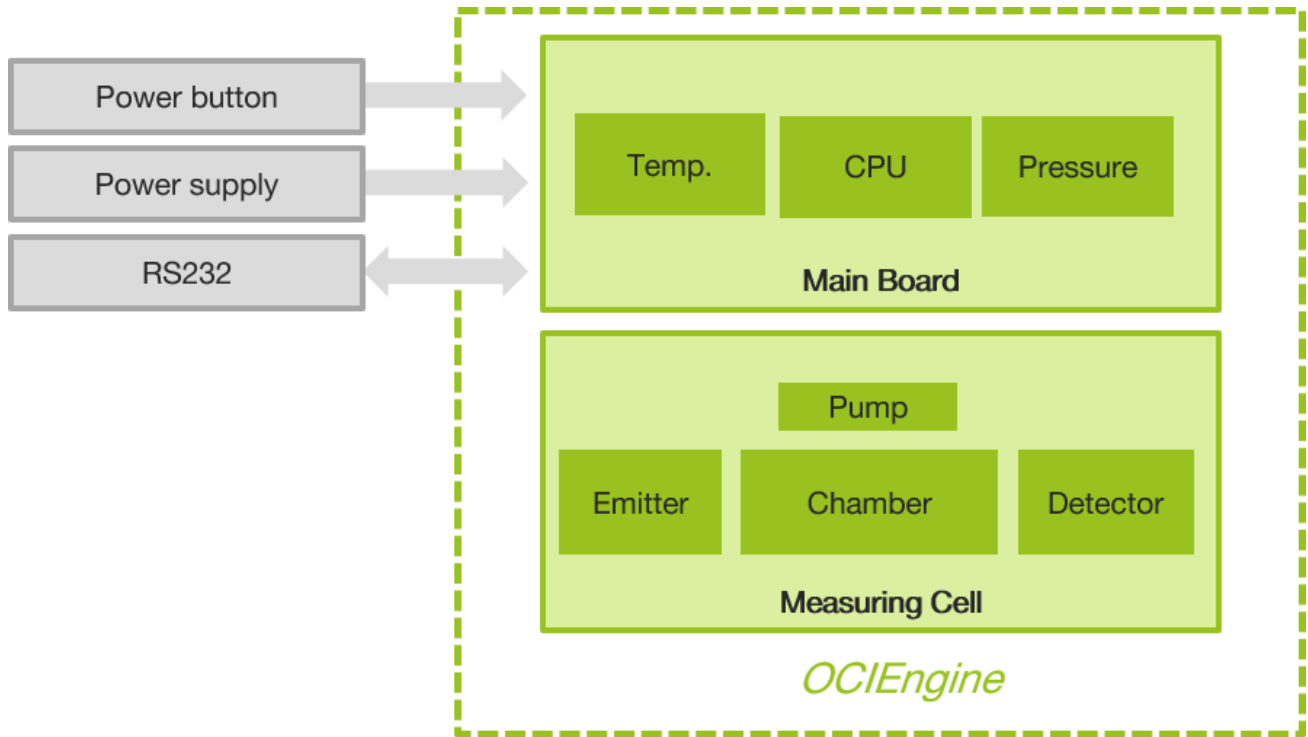
Unit of measurement	Breath alcohol content (BrAC) in exhaled air: µg/L
Measurement range	From 50 to 4000 µg/L 50 µg/L corresponds to the detection limit of the measuring cell
Measurement accuracy (max error)	
<i>Conditions:</i>	
- ambient temperature: 23°C (± 3°C)	± 20 µg/L @ 100 µg/L*
- wet air inlet (>95% RH, 34°C): ethanol gas	± 40 µg/L @ 400 µg/L*
- flow rate: 12 L/min	
- no casing	
Blow duration	4000 ms minimum
Air inlet pressure sensor	Minimal delta pressure to activate alcohol measurement: 0.3 mbar Minimal delta pressure during the blow time to have alcohol measurement valid: 0.2 mbar
Air inlet flow rate	Must be upper than 8.5 L/min to activate the alcohol measurement If air inlet is lower than 5.0 L/min during the blow time, the measurement is not valid
Sampling period	125 ms
Alcohol in mouth detection	Detection above 250 µg/L

*compliant with NF EN 15964 standard

Other compounds detection on request

Acetone (C3H6O), Carbon Dioxide (CO2), Carbon Monoxide (CO)

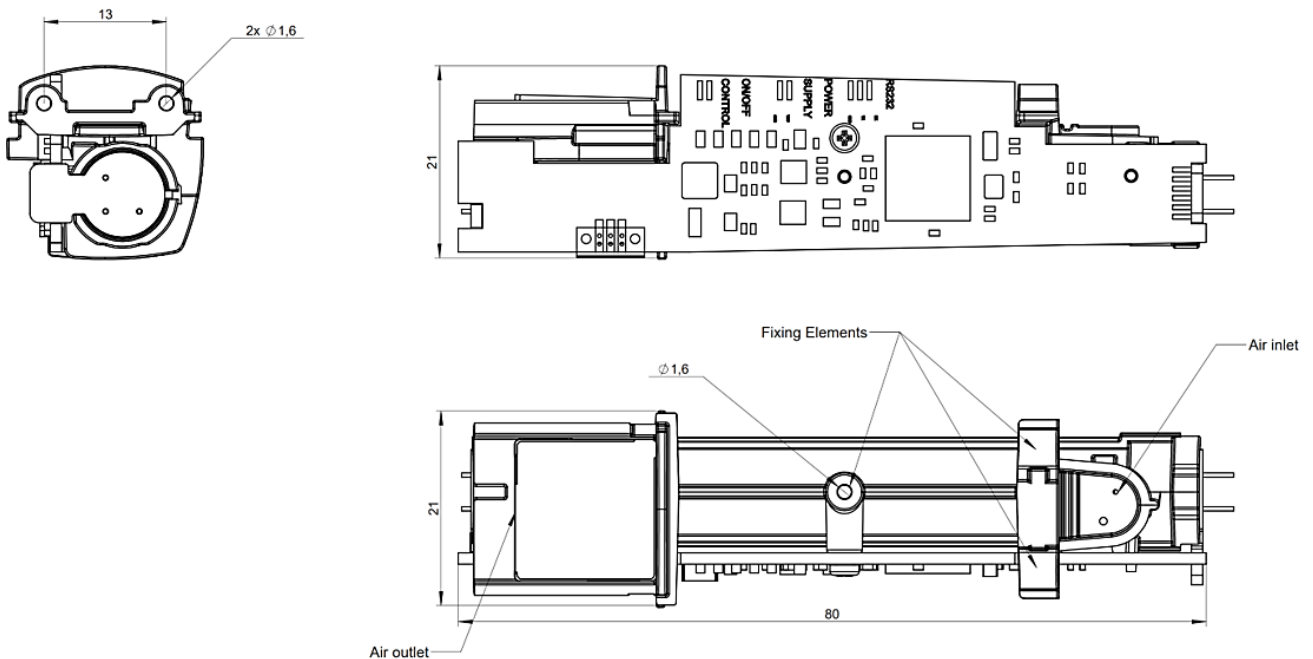
Architecture



Package information

Dimensions	21 x 21 x 80 mm
Weight	17g
External plastic casing	ABS PC-UL94V0
Fixing parts	3 apertures (Ø 1.6 mm) compatible with self-tapping screws (1.8 mm recommended) to fix OCIEngine.

Different views of OCIEngine (footprint and fixing parts – dimensions in mm)

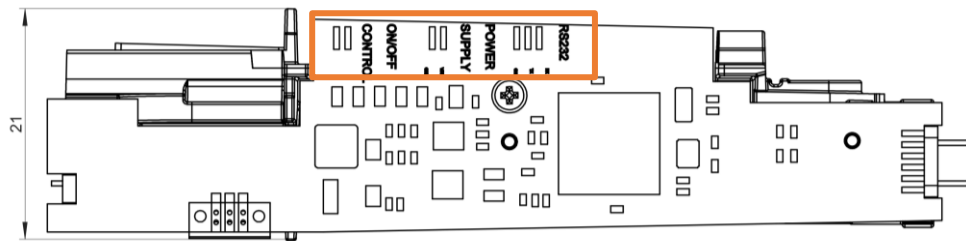


Electrical characteristics

Supply voltage*	3,7 V _{bc} min
	4,2 V _{bc} max
Input current	1,5A max
	RS232 protocol*
Communication interface	Voltage level: ±5,5V
	3 wires mode
For all I/O	Solder pad connection 1 x 0.5 mm*
Recommended cable sections for all I/O	≤ 0.13 mm ² (AWG ≥ 26)
On/off command interface	Not active = Open-Load
	Active = GND

* can be adapted on request

Zoomed view on the connectors (dimensions in mm)



Calibration

Can be calibrated in dry and wet gas

Test gas conditions 34°C / >95% HR

Environnemental conditions

Operating conditions From 0°C to 55°C

Storage From -10°C to 70°C

Typical starting time (pre-heating phase) depending on the ambient temperature:

- @ 0°C: 160 s.

- @ 10°C: 80 s.

- @ 20°C: 60 s.

- @ 40°C: 40 s.