

R-LAB

MOBILE SENSOR FOR AIR POLLUTION DIAGNOSIS



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Introduction

The R-Lab detector is an original solution of the LTA Design company. It was developed as a part of project MapAIR multidimensional system for air pollution diagnosis using a swarm of drones and mobile sensors. The device measures the concentration of six chemical substances:

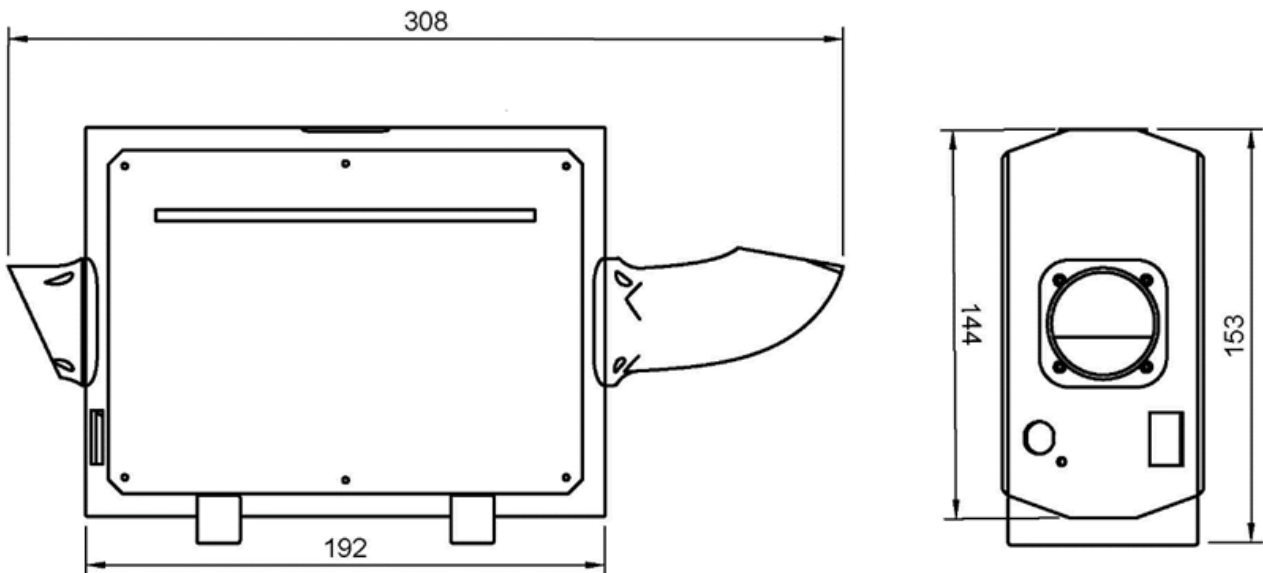
- particulate matter (PM1; PM2.5; PM10),
- sulfur dioxide (SO₂),
- nitrogen dioxide (NO₂),
- formaldehyde (CH₂O),
- volatile organic compounds (VOC)
- ozone (O₃).

The device has been tested and calibrated by an independent research institution, confirming its high quality and correctness of indications. The R-Lab sensor is prepared to work in the network: on vehicles (bus, tram, taxi, drone). It can also work on stationary points - on traffic lights or lanterns. These sensors accumulate data 24/7 from the whole operating region. Results of measurements are available in real time on a dedicated geoportal (mapa.mapair.pl) and can be presented in the form of graphic map.

Description of the device

The R-Lab detector is a modular air quality meter, which in its basic version is dedicated to measuring the concentration of dust suspended in the air (PM1, PM2.5, PM10), volatile organic compounds (VOC), formaldehyde (CH₂O), sulfur dioxide (SO₂), ozone (O₃) and nitrogen dioxide (NO₂). The design of the device is modular and enables easy replacement of components, as well as the extension of the detector with sensors for measuring the concentrations of other substances eg. hydrogen chloride (HCl), ammonia (NH₃), carbon monoxide (CO).

Device dimensions



R-LAB General information	
Communication standards	LTE, USB
Power	DC 12V @ 2A
Dimensions	160 x 120 x 50mm
Measurement frequency	configurable, maximum 1Hz, possible averaging with a specified time constant (x minutes, hours, days, weeks, months, years)
Operating time on the built-in battery	4 h
Average power consumption	4W
Maximum power consumption	25W
Daily energy consumption	0,01 kWh
Annual energy consumption	3,7 kWh
Charger	external AC 100 - 220V 24W
Access to the data	Via website: mapa.mapair.pl , SD memory card
Measurement	Basic version: PM1, PM2.5, PM10, VOC, CH2O, SO2, NO2, O3 temperature, humidity, pressure
Temperature	Range -40 ° C ÷ 100 ° C Accuracy ± 1.0 ° C
Humidity	Range 0 ÷ 100% Accuracy ± 4.5%
Pressure	Range 260 ÷ 1260 hPa Accuracy ± 1hPa
Air flow	Forced



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