

AirPublic Sensorbox

Infosheet & Technical Specification

Version: 4.0

09.01.2019

1. Description:

The AirPublic sensorbox is a vehicle mounted or fixed location unit that is able to sense various air pollutants and use LoRa or Cellular network connectivity to transmit the recorded readings along with GPS location to a remote server. The unit has dual redundancy gas and PM sensors to improve the reliability of the reading. The unit can be powered in a number of ways, depending on power sources available in the context.

2. Features:

The AirPublic sensorbox is able to sense:

- Particulates (pm1, pm2.5 and pm10)
- Nitrogen Dioxide (NO₂) gas concentration
- Ozone
- Nitrogen Oxide (NO)
- Temperature
- Relative humidity
- Noise
- Location

Additionally, SO₂ an/or CO can be incorporated on request

3. Dimensions:

Main unit without bracket:

- Width: 125mm
- Height: 230mm
- Depth: 65mm

Bracket: Fixed 200mm x 230mm bracket with 6 M6 mounting holes

LoRa antenna: Allow 50mmx10mm

4. Power usage:

Power options are flexible depending on context:

- A standard 12V car battery (as long as the battery is regularly charged by an alternator or electric vehicle charging circuitry)
- A 240v fixed mains socket
- A 110v construction site mains power supply
- A solar panel
- Lamp post powered (using commando sockets)

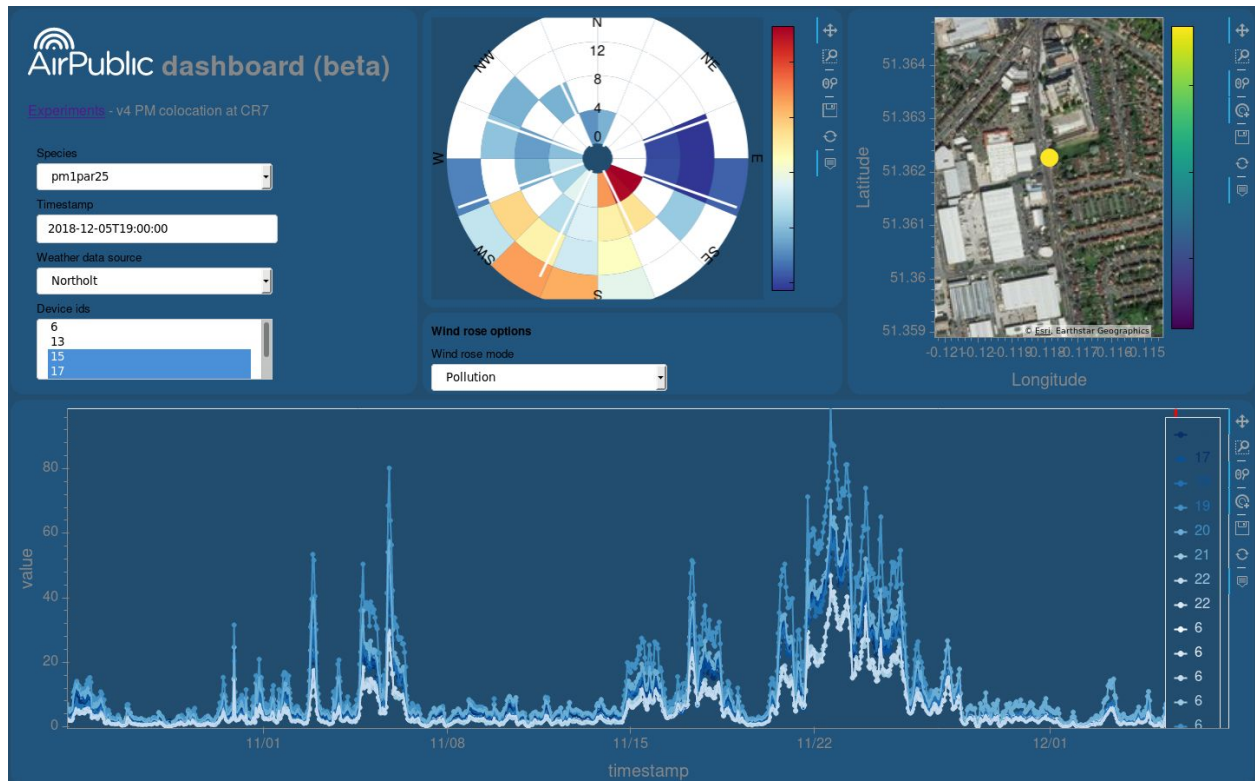


5. Connections:

- Weipu SP13 series 12v DC connector
- 1 x SMA for LoRa antenna

6. Data outputs

The data visualisations are flexible and can be created in dialogue with the client, depending on the decisions to be made or actions taken. Live data can be viewed through the dashboard.



7. Electrical and sensor device specifications

7.1. Electrical:

	Value	Unit
Input voltage min	9	V
Input voltage max	24	V
Nominal current draw	300	mA
Peak current draw	1	A
Fuse rating	1.8	A

7.2. Operation:

	Value	Unit
Time resolution (readings)	30	s
Recommended installation height above ground	3	m

7.3. Internal sensor devices:

	Value	Unit
Noise Range	0-100	uncalibrated
NO2 Sensor Response Time	60	s
NO2 Sensor Range	0-20	ppm
NO2 Sensor Noise (+- 2 σ)	15	ppb
NO Sensor Response Time	25	s
NO Sensor Range	20	ppm
NO Sensor Noise (+- 2 σ)	80	ppb
O3 Sensor Response Time	20	s
O3 Sensor Range	0-500	ppm
O3 Sensor Noise (+- 2 σ)	20	ppb
PM Sensor Response time	10	s
PM Sensor Sampling interval	200	ms
PM Sensor Flow Rate	0.1	L/m

7.4. Comparison with reference monitor during field co-location. R2= 1 - (residual sum of squares)/(total sum of squares)

Pollutant species	R2
NO2	0.73±0.09
PM10	0.82±0.14
PM2.5	0.84±0.17
PM1	0.91±0.08
O3	On-going co-location
NO	On-going co-location