AIR QUALITY MONITORS BUYER'S GUIDE

This guide will help you to:

- Discover a comprehensive overview of air quality monitors.

- Identify critical factors to consider when selecting an air quality monitor or solution provider.

- Learn how to select a solution that complies with regulatory and environmental standards.

Table of contents

Terms and symbols

PM1 — particulate matter with an aerodynamic diameter <1 μm

PM2.5 — particulate matter with an aerodynamic diameter <2.5 μm

PM10 — particulate matter with an aerodynamic diameter <10 μm

Co — carbon monoxide

Co — carbon dioxide

NO — nitric oxide

So — sulphur dioxide

H S — hydrogen sulphide

O — ozone

MCERTS — Monitoring Certification Scheme – it is a certification scheme by the UK Environment Agency that ensures environmental monitoring equipment, personnel, and laboratories meet high standards for accuracy and reliability. Airly has received MCERTS certification for both PM2.5 and PM10.

PAS 4023 — PAS 4023:2024 is a brochure that provides recommendations on selecting, deploying, and controlling the quality of air sensor systems in outdoor ambient air.

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Why air quality monitoring matters

The Confederation of British Industry reports that meeting WHO guidelines on air pollution could add **£1.6 billion to the UK economy each year.**

Similarly, the US Environmental Protection Agency has found that every **$1 spent on air pollution control yields an estimated $30 in economic benefits.**

These figures speak for themselves: it's time to shift our mindset from viewing air quality as a cost to recognising it as an asset.

At Airly, we are committed to this vision and are on a mission to empower the world to tackle and prevent the threat of air pollution by providing actionable and reliable air quality insights.

We have already helped businesses and governments promote clean air initiatives and introduce new policies based on location-specific data. With accurate data, the importance of clean air becomes undeniable, making a compelling case for further measures to improve air quality.

This guide is designed to help buyers select the best air quality monitors and platforms for their needs, with a strong emphasis on the importance of accurate and reliable technology.

Source: https://www.cleanairfund.org/news-item/clean-air-an-asset-for-all/

Let's rewrite the narrative together!

Clean air is an economic asset.

By combating air pollution, you reduce health and productivity-related risks, stimulate new models of economic growth, and promote sustainable development.

Rely on accurate data.

With data-driven solutions, you can enhance the effectiveness of your initiatives. Comprehensive, location-specific data and advanced monitoring systems enable informed decision-making.

Prevention is better than cure.

Reduce the cost of health damage by investing in clean energy now to prevent long-term consequences.

About Airly

Our goal is to make air quality visible and understandable to all. We strive to increase social awareness by sharing information about the significance of air quality and the threats we face. We aim to inspire behavioural change and engage both individuals and institutions in the air quality debate.

To achieve this, we are constantly improving and expanding our global air quality monitoring network. We provide smart sensors, the **Airly Data Platform**, the **Airly app**, and participate in numerous initiatives to spread the world.

Monitors
overview

Airly Air Quality Monitors

Best source of hyperlocal, real-time air pollution measurements

- Airly monitors measure air quality in your surroundings

- Sensors can track key pollution markers, including particulate matter (**PM1, PM2.5, PM10**), as well as **NO2, O3, SO2, H2S, NO,** and **CO** gases.

- They also provide data on essential weather parameters, such as temperature, humidity, air pressure, and wind, from our sensor locations.

- Airly devices, compared to legacy sensors are easy to install, small, and unobtrusive.

- To date, over 7,000 monitors have been installed worldwide, demonstrating proven quality in various climate conditions.

Trusted and certified by

AIRLAB

Best Sensor
2019

Tested by South Coast
AQMD's AQ-SPEC

NILU

Research Project
Partner

mCERTS
THE ENVIRONMENT AGENCY'S
MONITORING CERTIFICATION SCHEME

MCERTS certification
for PM2.5 and PM10

► **AIR PARIF**

AirParif 2023 certification for high accuracy in the
measurement of PM1, PM2.5, PM10, NO, and O3.

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Airly
Pure

An air quality monitor that measures PM1, PM2.5, and PM10. It provides data access through the Airly Data Platform, with reliable GSM data transfer to ensure seamless integration and continuous monitoring.

Constant working conditions

Temperature	-40°C — +80°C
Humidity	0 — 100%
Pressure	700 — 1 200 hPa

Measurements

	Range	Resolution
Temperature	-40°C — +80°C	± 0,1°C
Humidity	0 — 100%	± 1%
Pressure	700 — 1 200 hPa	± 1 Pa
PM1	0-1000 ug/m^3	1 ug/m^3
PM2.5	0-1000 ug/m^3	1 ug/m^3
PM10	0-1000 ug/m^3	1 ug/m^3

Measurement frequency

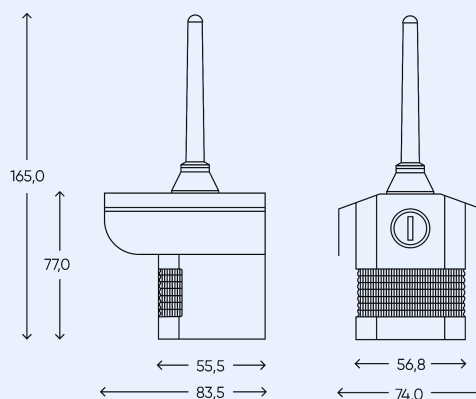|	
Continuous measurements	1-2 seconds
Averaging interval	1-5 min
Sending interval	5-15 min

In low power mode

Sample Interval	1-2 seconds every 4 minutes
Sleep Time	16 minutes
Send Interval	15 min - 1 hr

Enclosure parameters and weight

Case material	Stainless steel
Dimensions	74 x 77* x 83,5 mm *without antenna
Device weight	440g

165,0

77,0

← 55,5 →

← 83,5 →

← 56,8 →

← 74,0 →

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Airly
Aura

Constant working conditions

Temperature	-40°C — +80°C
Humidity	0 — 100%
Pressure	700 — 1 200 hPa

Measurements

	Range	Resolution
Temperature	-40°C — +80°C	± 0,1°C
Humidity	0 — 100%	± 1%
Pressure	700 — 1 200 hPa	± 1 Pa
PM1	0-1000 ug/m^3	1 ug/m^3
PM2.5	0-1000 ug/m^3	1 ug/m^3
PM10	0-1000 ug/m^3	1 ug/m^3
NO_2 | O_3 | NO | SO_2 | Co	0-4000 ppb	1 ppb

An air quality sensor that measures PM1, PM2.5, and PM10, along with customisable gas pairs, like NO2/O3, SO2/CO, or NO2/NO. It offers data access through the Airly Data Platform, with reliable GSM data transfer ensuring seamless integration and continuous monitoring.

Measurement frequency

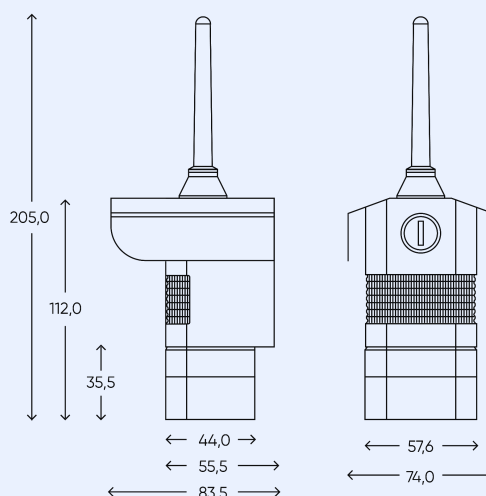|	
Continuous measurements	1-2 seconds
Averaging interval	1-5 minutes
Sending interval	15 minutes

In low power mode

Sample Interval	1-2 seconds every 4 minutes
Sleep Time	16 minutes
Send Interval	15 min - 1 hr

Enclosure parameters and weight

Case material	Stainless steel
Dimensions	74 x 112* x 83,5 mm *without antenna
Device weight	490g

205,0
112,0
35,5
44,0
55,5
83,5
57,6
74,0

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Airly
Orbital

Constant working conditions

Temperature	-40°C — +80°C
Humidity	0 — 100%
Pressure	700 — 1 200 hPa

Measurements

	Range	Resolution
Temperature	-40°C — +80°C	± 0,1°C
Humidity	0 — 100%	± 1%
Pressure	700 — 1 200 hPa	± 1 Pa
PM1	0-1000 ug/m^3	1 ug/m^3
PM2.5	0-1000 ug/m^3	1 ug/m^3
PM10	0-1000 ug/m^3	1 ug/m^3
NO_2 | O_3	0-4000 ppb	1 ppb

Measurement frequency

Continuous measurements	1-2 seconds
Averaging interval	1-5 minutes
Sending interval	5-15 minutes

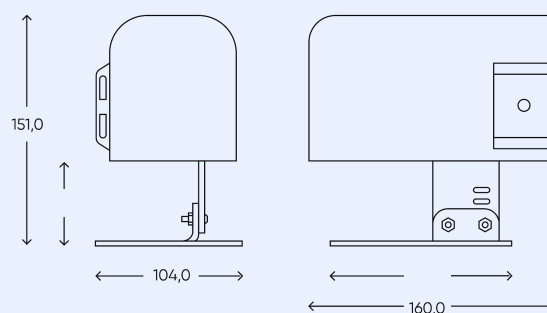### In low power mode

Sample Interval	10 seconds every minute
Sleep Time	16 minutes
Send Interval	10 seconds every minute

Enclosure parameters and weight

|	
Case material	Aluminum + PETG
Dimensions	151 x 160 x 104 mm
Device weight	1020g
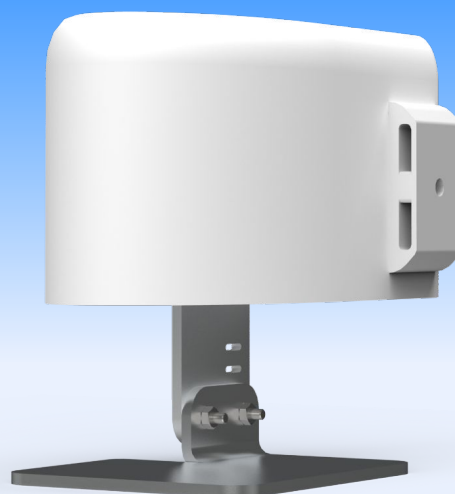
A mobile air quality monitor that measures PM1, PM2.5, PM10, NO2, O3, SO2, and CO in real time. Using GSM technology and the Airly Data Platform, it provides accurate data and is designed for easy installation in various environments (magnet-mounted monitor). Ideal for straightforward fitting on vehicles and monitoring air quality in remote areas, where access to fixed stations is limited.

151,0   104,0   160,0

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Sensors Comparison

https://airly.org/en/features/air-quality-sensors/
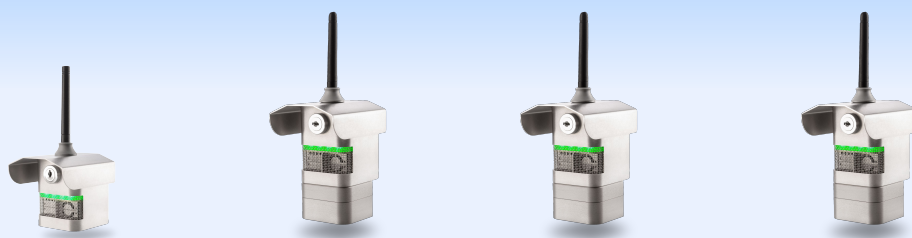
Pollutants		Airly Pure	Airly Aura, NO$_2$, O$_3$	Airly Aura, SO$_2$, CO	Airly Aura, NO$_2$, NO
Dust	PM1	✔	✔	✔	✔
Dust	PM2.5	✔	✔	✔	✔
Dust	PM10	✔	✔	✔	✔
Ozone	O$_3$	✘	✔	✘	✘
Nitrogen dioxide	NO$_2$	✘	✔	✘	✔
Nitric oxide	NO	✘	✘	✘	✔
Carbon monoxide	Co	✘	✘	✔	✘
Sulphur dioxide	S$_2$O	✘	✘	✔	✘
Hydrogen sulfide	H S	✘	✘	✘	✘

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Deployment and maintenance

How to mount AQ sensors & regulatory guidelines:

Sensor systems should be deployed according to the manufacturer's instructions to ensure optimal performance.

They should be placed in areas with free air circulation, ideally at least one tree or building height away from obstructions, to minimise the effects of wind shadowing.

8m

1.5m
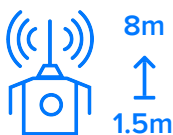
Additionally, where possible, sensors should be located within the breathing zone, between 1 to 4 metres above the ground.

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Avoid deploying sensor systems:

Too close to vertical or horizontal surfaces

In the wind shadow of trees or other obstacles in the path of prevailing winds

In confined spaces, such as subways, tunnels, underpasses, or areas with poor ventilation

Near central heating exhaust vents/flues, air conditioning outlets, vegetation, or direct emissions from industrial sources

In areas with strong electromagnetic radiation fields

Źródło: Selection, deployment and quality control of low-cost air quality sensor systems in outdoor ambient air – Code of practice, The British Standard Institution, 2023

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Considerations for deploying the sensor system:

Ensure a secure environment to minimise the risk of vandalism or theft

Provide safe access for ongoing maintenance

Ensure the availability of electrical power and communication lines

Assess the visibility of the site in relation to its surroundings

Prioritise the health and safety of the public and operators

Verify any planning permission requirements

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Key consideration for selecting air quality monitors

#1 Accuracy and Reliability

Accurate and reliable data is crucial for effective air quality management and decision-making. Data should be the foundation for actions to improve air quality.

Government interventions to promote clean air are more likely to succeed when supported by comprehensive, location-specific data on air pollution and enhanced emissions monitoring. Policymakers and regulators can ensure the availability of this information by collaborating with research institutions and civil society organisations.

Citizens can also advocate for better monitoring systems, demand transparency, and even contribute air pollution data themselves. With compelling data, the importance of clean air becomes undeniable, making a strong case for further measures to improve air quality.

Airly's deployment methods comply with PAS regulations.

Airly's advantage

Airly monitors are certified under the MCERTS (Monitoring Certification Scheme), a UK standard established by the Environment Agency.

This certification ensures that environmental monitoring equipment is accurate, reliable, and fit for purpose. Proven in dozens of countries and across various climatic conditions—from South Africa to Indonesia to Ireland—Airly sensors provide precise measurements of pollutants such as PM1, PM2.5, PM10, NO2, O3, SO2, and CO. To maintain data integrity, these sensors are continuously calibrated.

mCERTS
THE ENVIRONMENT AGENCY'S
MONITORING CERTIFICATION SCHEME

#2 Cost-effectiveness

At Airly, we prioritise quality without overlooking financial accessibility. Our air quality monitors are certified for their effectiveness and accuracy.

The installation price includes **comprehensive technical support** from the Airly team, such as device calibration, customer service, data integration, and API support (enabling the integration of Airly data with your chosen application or service, as well as access to current and historical data).

#3 Ease of Installation and Maintenance

Airly monitors are engineered for effortless installation and minimal upkeep. Their robust design ensures suitability for various environments, including harsh weather conditions.

Maintenance features include remote re-calibration, device management, and diagnostics.

The JCDecaux Case

JCDecaux, the world's largest outdoor advertising provider, offers a range of services, including bus stop advertising systems, billboards, public bicycle rental systems, and street furniture, all with a strong focus on sustainability.

However, they faced challenges in finding environmental monitoring sensors that could seamlessly integrate with the design of their advertising equipment.

To address this, Airly provided ambient air quality monitors with customised antennas that fit discreetly into their advertising boards without any protruding elements.

JCDecaux
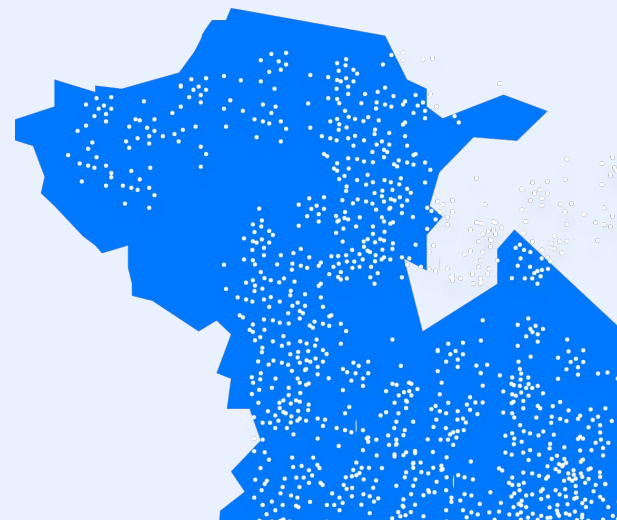
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#4 Connectivity and Data Access

Airly sensors support GSM connectivity and can be powered by solar energy, offering enhanced flexibility. Data is accessible through the Airly map, mobile apps (iOS, Android, Huawei App Gallery), widgets, and API, making it easy for users to access and utilise the information.

2M **App downloads**

1M **Active online map users monthly**

40 000 **source station locations**

Download the Airly app:

GET IT ON
Google Play

Download on the
App Store

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#5 Real-Time Data and Alerts

Airly provides real-time data and customisable air pollution alerts, enabling users to respond promptly to changing air quality conditions. Additionally, Airly's reliable data is used by governments to introduce new policies aimed at mitigating the threats posed by air pollution.

Airly supports local authorities and communities by offering a range of tools to monitor air quality in their neighbourhoods. These include the Airly Map, Airly app, Airly widgets, and LED lights that change color based on the air quality index.

Airly Data Platform

— is a constantly improving software platform thanks to users who can make data-driven decisions, start and monitor initiatives, and make fundamental behavioural changes to reduce pollution, limit exposure, **and improve the health of people worldwide.**

Real Time Dashboard

Forecast & Calibration

Social Impact Tracker

Air Quality Insights
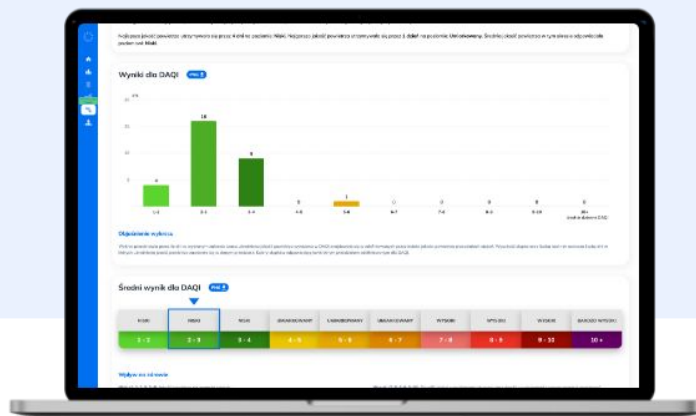
Airly Map -Web Map

Air Pollution Alerts

**Report Generator**

Sensor Manager

Mobile App

Applications

- Governments proactively monitor air quality, enabling data-driven decisions and the introduction of policies for healthier cities.

- Businesses enhance their ESG impact by integrating sustainability into their innovative solutions, such as smart city applications.

- Air quality consultants automate assessment reporting, achieving significant time and effort efficiencies.

- Citizens raise awareness and promote behavioural change.

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Airly Data Platform
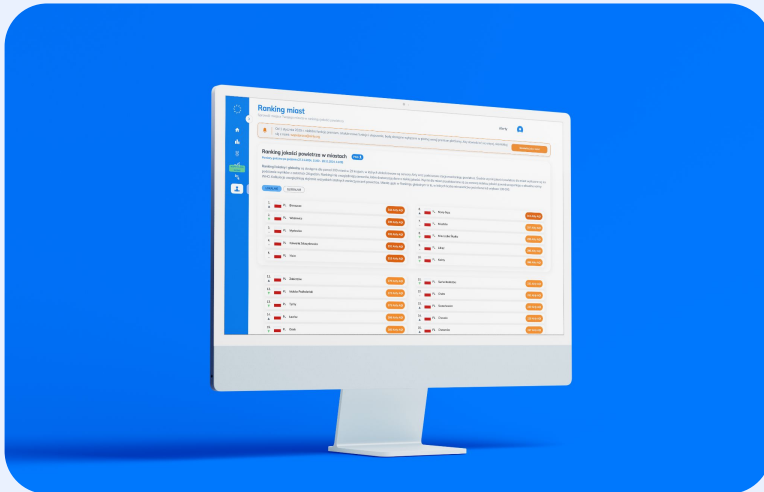
Data Platform enterprise tools allows users to:

- Browse real-time and hyperlocal air quality data

- Discover insights on sources of pollution

- Prepare and generate reports (in CSV format)

- Download predefined and custom charts

- Get notifications when air quality rises above dangerous levels

- Take action

- Check a user's impact on their community thanks to the Social Impact Tracker

- Track the progress and impact of initiatives on air quality

- Additional sources of data from satellite, traffic, weather data, private AQ networks, public AQ stations

Competitors Comparison

No competitor offers the same end-to-end solution and global traction

	Sensor network		Data processing		Software tools	
	Proprietary hardware	**High quality measurements**	**Real-time calibration**	**Aggregation of other data**	**Analysis and insights**	**Apps for communities**
airly	Over 7,000 sensors worldwide. Measuring PM1, PN2.5, PM10, NO_2, SO_2, O_3, CO. ✔	mCERTS certified. Verified by Independent Sensor Performance Evaluation Centres - AQMD, AirParif, GIOŚ. ✔	PM calibration based on geographic & historical data. Gas AI-driven baseline algorithm developed by Airly. ✔	+25k stations integrated (incl. DEFRA, EEA, US EPA, CMDC).Road geometry & traffic, human and ecological receptors. ✔	Enterprise tools to analyse air quality and generate actionable insights.AI-based text generation. ✔	Free mobile apps (web app, iOS, Android) to share real-time air quality data and promote air quality initiatives. ✔
Competitor #1	✖	✖	✖			
Competitor #2			✖	✖		✖
Competitor #3		✖	✖	✖	✖	✖

Let's talk about repairing the air together!

[Contact us]

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