AERNODE

Outdoor Air Quality Monitoring

Solutions for Continuous Ambient Air Measurement

Powered by QUANTA

AERNODE

Aernode is a next-generation air quality monitoring system for outdoor environments. It delivers real-time, continuous measurements of key atmospheric pollutants and environmental conditions, providing a scalable and cost-effective alternative to traditional monitoring stations.

How does it work?

1 Air Quality Monitors

Multi-pollutant AQMs for continuous outdoor monitoring.

A modular design built to support a wide range of applications.

2 Data Management

Connect to Quanta AER Cloud for an out-of-the-box solution, or integrate devices into any existing platform.

3 Data Reporting Tools

Web-based tools for real-time monitoring, historical analysis, automated reporting, and public-facing dashboards.

AIR QUALITY MONITORS

Aernode is a modular, multipollutant outdoor monitoring system that combines high configurability with compact design. The product line includes two models — **Aernode** LITE and **Aernode** PRO —tailored for different monitoring needs, from essential deployments to advanced sensing applications.

Accurate Data

Best-in class sensor technology

Multi Pollutant

Modular configurations for any monitoring scenario

Smart Maintenance

Quick-swap sensor replacement kits

Remote Management

Bidirectional connectivity for full device control

Base Station

Connectivity	Multiband Cellular
	Wi-Fi, Modbus RTU (RS485)
Transmission Frequency	30 sec to 60 minutes
GNSS	GPS · GLONASS · Galileo · BeiDou
Power Supply | Consumption	5-15 Vdc | 2 – 6 W
Enclousure	Polymer Composite · IP55 weatherproof
Optimal Temp. Range	–20 °C to +50 °C | 0 to 95% RH
Weight & Size (L x H)	950 gr - 200 x 250 mm

Configurable Sensors

Built-in Sensors	Air Temperature (Internal & External)
	Relative Humidity · Atmospheric Pressure
Optional Sensors	PM 2.5 · PM 10 · T.VOC Index · CO2
	Sound Level Meter
Sensor Deck	NO2 · O3 · CO · SO2 · H2S · NO · NH3 · CL · HCL
	PH3 · HCN · PH3 · ETO · T. VOC (PID) · H2O2
External Sensors	Rain Gauge · Wind Speed · Wind Direction
	Solar Radiation

SYSTEM ARCHITECTURE

Core Sensor Board

The Core Sensor Board is integrated into every Aernode device as the default sensing layer. It includes standard environmental sensors and supports a limited number of optional sensors, enabling basic customization without the need for additional modules.

Built-in Sensors	Air Temperature	Relative Humdity	Atmospheric Pressure					
Optional Sensors	PM 2.5 PM 10	T.VOC Index	Carbon Dioxide	Sound Level Meter				

Sensor Deck Module

The Sensor Deck is an optional expansion module that extends the sensing capabilities of Aernode. It allows integration of up to 4 additional sensors on **Aernode** LITE, and up to 8 on **Aernode** PRO.

	AERNODE LITE				AERNODE PRO							
	NO_2 Nitrogen Dioxide	O_3 Ozone	CO Carbon Monoxide	SO_2 Sulfur Dioxide	HCN Hydrocyanic Acid							
	H_2S Hydrogen Sulfide	ETO Ethylene Oxide	NO Nitrogen Monoxide	CL Chlorine	HCL Hydrochloric Acid							
	PH_3 Phosphine	H_2O_2 Hydrogen Peroxide	NH_3 Ammonia	VOC Volatile Organic Compounds								

INSTALLATION

Aernode devices are designed for quick installation and rapid deployment. They can be mounted in a variety of urban and industrial environments: no complex infrastructure or specialized tools required.

Traffic Light Pole

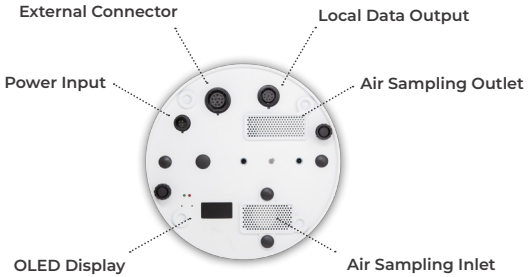
Bus Shelter

Urban Furniture

Wall Mount

Pubblic Lighting

Building Facade



Multiband Cellular
For wide-area mobile data, or Modbus RTU for local industrial communication

Plug-and-play installation
Aernode can be deployed in most settings with just a basic power connection

Accessories
Solar panels, mounting brackets, and tripods to support your installation needs

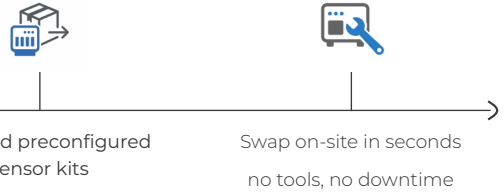
SERVICING

Smart Maintenance, Minimal Downtime.

Designed for maximum efficiency with flexible servicing options tailored to your needs.

In-Field

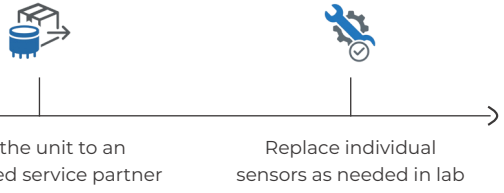
Sensor Kit Replacement



Best for fleet-wide servicing and minimizing operational disruption

In-Lab

Single Sensor Replacement



Cost-effective option for targeted servicing

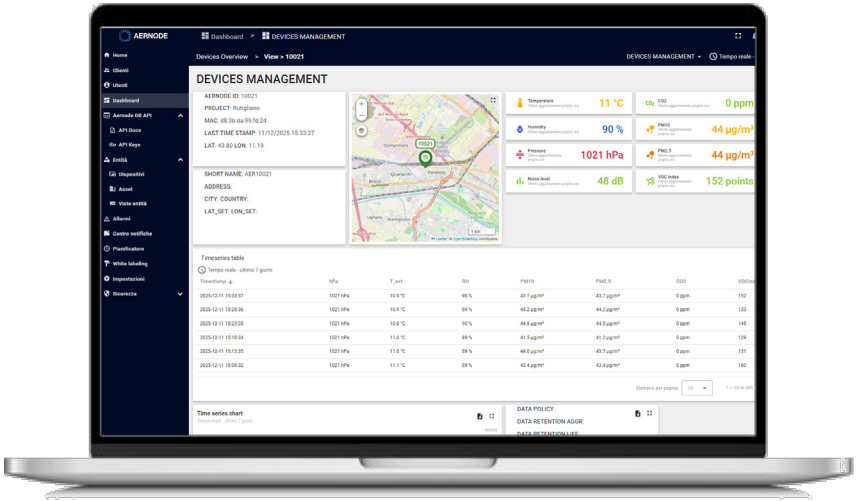
Remote Management

Configure, monitor, and troubleshoot your devices without on-site visits. Remote capabilities include: Provisioning & diagnostics, transmission settings and firmware updates. This reduces downtime, cuts costs, and enables scalable deployment across large networks.

DATA MANAGEMENT

Connect devices to any data management platform, or leverage our out-of-the-box solution

Quanta AER Cloud gives you complete control over your monitoring network: configure devices, manage fleets, apply calibrations, and monitor performance in real time. Export historical data for reporting and integrate seamlessly with external systems via secure APIs.



Configure & Manage

Set project parameters, deploy devices, and oversee them throughout their lifecycle

Calibration Control

Apply and update calibrations independently with full version control

Secure API Integration

Use authenticated APIs to connect data streams securely with other platforms

DATA VISUALIZATION

Transform Air Quality Data Into Actionable Insights

We provide a suite of web-based tools for air quality visualization, reporting, and communication. From private dashboards for advanced analytics to public-facing views for stakeholder engagement, our platform supports both internal decision-making and external transparency.

Private Dashboards & Analytics

Secure, user-specific dashboards for detailed analysis, custom filters, and advanced metrics

Public Sharing & Communication

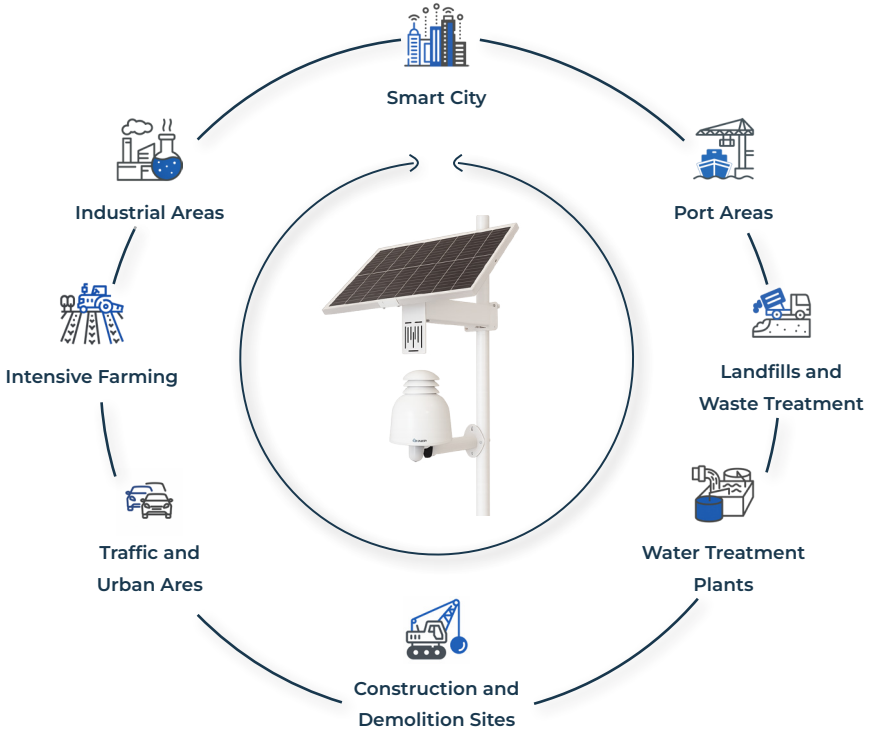
Share dashboards publicly to increase transparency, inform stakeholders, and support community awareness.

Automated Reporting & Alerts

Generate scheduled reports, receive alert notifications on threshold breaches, and streamline monitoring workflow

APPLICATIONS

Designed for adaptability, the monitoring system can be deployed across diverse outdoor environments, supporting a broad range of air quality monitoring scenarios.



Continuous Ambient Air Measurement
A scalable, modular solution designed to monitor a wide spectrum of pollutants

Odor Control
Track short-term gas variations commonly associated with odor events

Pollution Source Monitoring
Monitor pollution hotspots and analyze dispersion dynamics

SOLUTIONS

Sensor configurations can be tailored to each application, enabling targeted monitoring of pollutants most relevant to specific industrial, urban, and environmental settings.

Industrial Areas

NO_2 | CO | SO_2 | H_2S | NO | VOC | PM

Smart City

NO_2 | O_3 | CO | PM

Water Treatment Plants

NO_2 | O_3 | H_2S | NO | VOC | PM

Port Areas

NO_2 | CO | SO_2 | NO | PM

Traffic and Urban Areas

NO_2 | O_3 | CO | NO | PM | Noise

Construction and Demolition Sites

NO_2 | CO | SO_2 | PM | Noise

Landfills and Waste Treatment

NO_2 | CO | H_2S | NO | VOC | PM

Intensive Farming

NO_2 | O_3 | CO | H_2S | VOC | PM | SO2

SERVICES

A complete suite of services is available to support every stage of an air quality monitoring project: from deployment to data analysis.

Training & Onboarding

Hands-on programs to equip your team with the knowledge needed to operate, interpret, and manage air quality monitoring systems.

Sensors Maintenance

Flexible in-lab and field-based servicing options tailored to your needs, ensuring long-term reliability and accuracy.

Data Analysis & Report

Advanced analytics and reporting services to help you extract insights and inform air quality decisions.

Set-Up & Configuration

Expert support to configure and deploy monitoring networks tailored to your application, environment, and connectivity needs.

Remote Diagnostic

Continuous assistance for remote troubleshooting, firmware updates, and network monitoring, minimizing down-time and site visits.

Dashboard Customization

Tailored support for setting up public or private dashboards, aligned with your reporting and stakeholder engagement needs.

SENSOR SPECIFICATIONS

Sensors	Sensor Type	Measurement Range [1]	Recommended Measurement Range [2]		Operational Resolution [3]		LOD Limit of Detection [4]		Operating RH% Range [5]	Operating °C Range [6]
Air Temperature	Solide State	- 40 | + 80 °C	- 20 | + 80 °C		+ 0.3 °C		n.a.		n.a.	n.a.
Relative Humidity	Solide State	0 - 100 %	0 - 100 %		+ 1 %		n.a.		n.a.	n.a.
Atmospheric Pressure	Solide State	300 to 1,100 hPa	500 to 1,100 hPa		+ 1 hPa		n.a.		0 - 100 %	- 20 | + 70 °C
PM 2.5 - PM 10 [A] [B]	Optical Particle Counter	0 - 1,000 µg/m3	0 - 1,000 µg/m3		1 µg/m3		1 µg/m3		0 - 90 % [A] 0 - 95 % [B]	- 10 | + 50 °C
Sound Level Meter	Phonometer (class 2)	30 - 120 dB	30 - 120 dB		± 0.5 dB		30 dB		n.a.	n.a.
T.VOC (Index)	MOX	1 - 500 Index pts	1 - 500 Index pts	0 -1,000 ppm	1 Index pt		0.05 ppm		0 - 90 %	- 10 | + 50 °C
CO_2	NDIR	400 - 5,000 ppm	400 - 5,000 ppm		± 50 ppm		400 ppm		15 - 90 %	- 30 | + 50 °C
NO_2	Electrochemical	0-20 ppm	0-540 ppb	0-1,000 µg/m³	≤ 5 ppb	≤ 9.4 µg/m³	15 ppb	28 µg/m³	15 - 85 %	-30 | + 40 °C
O_3	Electrochemical	0-20 ppm	0-400 ppb	0-800 µg/m³	≤ 5 ppb	≤ 10 µg/m³	5 ppb	10 µg/m³	15 - 85 %	-30 | + 40 °C
CO	Electrochemical	0-500 ppm	0-9 ppm	0-10 mg/m³	≤ 0.1 ppm	≤ 0.12 mg/m³	0.1 ppm	0.12 mg/m³	15 - 90 %	-30 | + 50 °C
SO_2	Electrochemical	0-50 ppm	0-488 ppb	0-1,250 µg/m³	≤ 5 ppb	≤ 13 µg/m³	35 ppb	90 µg/m³	15 - 90 %	-30 | + 50 °C
NO	Electrochemical	0-20 ppm	0-650 ppb	0-800 µg/m³	≤ 5 ppb	≤ 6 µg/m³	20 ppb	25 µg/m³	15 - 90 %	-30 | + 50 °C
H_2S	Electrochemical	0-50 ppm	0-570 ppb	0-800 µg/m³	≤ 5 ppb	≤ 7 µg/m³	5 ppb	7 µg/m³	15 - 90 %	-30 | + 50 °C
T.VOC	PID	0-20 ppm	0-10 ppm	-	≤ 10 ppb	-	10 ppb	-	0 - 95 %	-20 | + 60 °C

Base Station Core Sensor Board Sensor Deck Module

1. **Measurement range:** concentration range measured by the sensor. It defines the limits within which the sensor can operate without suffering permanent damage or significant loss of linearity;
2. **Recommended measurement range**: It defines the concentration range within which the sensor operates with optimal accuracy, stability, and data quality.;
3. **Operational resolution**: the smallest concentration increment considered significant for ensuring the quality and repeatability of the measuremen;
4. **LOD (Limit of Detection):** the limit of detection is the minimum concentration that can be detected as significantly different at zero gas concentration
5. **Operating humidity range** (recommended humidity range): the range of humidity levels within which the sensor is designed to operate safely and provide accurate measurements.
6. **Operating temperature range:** the temperature range within which the sensor can operate safely and provide accurate measurements.

KEY BENEFITS

Designed for real-world deployments, Aernode combines flexibility, reliability, and seamless integration to support projects of any size or complexity.

Modular System Design

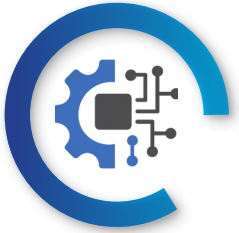
Aernode's modular hardware and flexible sensor architecture let you tailor each device to the specific needs of urban, industrial, or environmental monitoring.

Customizable for Any Application

Easy Servicing & Maintenance

Tool-free sensor replacement and versatile service options reduce maintenance effort, cut downtime, and lower total cost of ownership over time.

Lower Downtime, Lower Costs



Open Architecture

Connect to your existing infrastructure or use our turnkey data and reporting tools. Aernode adapts to your system, not the other way around.

Flexible Integration or Turnkey Use

WORK WITH US

JOIN A GLOBAL NETWORK OF INNOVATION

PARTNER WITH US TO EXPAND ACCESS TO SCALABLE AIR QUALITY SOLUTIONS WORLDWIDE.

DISCOVER OUR PARTNER PROGRAM AND BECOME AN OFFICIAL DISTRIBUTOR.

QUANTA

INNOVATION AND RELIABILITY FOR INDUSTRY AND THE ENVIRONMENT

Quanta S.r.l.
Via A. Ferrarin, 19-23, 50145 FIRENZE (FI) - Italy
VAT n° IT04273220485
Phone.: + 39 055 3024555
aernode@quanta.it
www.quanta.it

AERNODE

Outdoor Air Quality Monitoring

Solutions for Continuous Ambient Air Measurement

Quanta S.r.l.

Via A. Ferrarin 19 - 23, 50145 Firenze (FI), Italy

Phone : + 39 055 3024555

e-mail : aernode@quanta.it

website : www.quanta.it

www.aernode.io

aernode@quanta.it