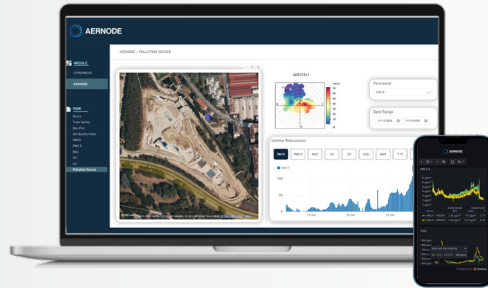




AERNODE

Outdoor Air Quality Monitoring

Solutions for Continuous Ambient Air Measurement



Powered by  QUANTA



AERNODE

Aernode is a modular air quality monitoring system for continuous outdoor measurement of atmospheric pollutants and environmental parameters. It is designed for scalable, cost-effective supplementary monitoring alongside conventional reference networks.



The Ecosystem



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 Aernode Cloud for an out-of-the-box solution, or integrate devices with compatible third-party platforms.



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.



Sensor Technology

Configurable sensing technologies for environmental monitoring



Multi-Pollutant

Modular configurations for a wide range of monitoring scenarios



Smart Maintenance

Quick-swap sensor replacement kits



Remote Management

Bidirectional connectivity for remote configuration and device management

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
Enclosure	Polymer Composite · IP55 weatherproof
Optimal Temp. Range	-20 °C to +50 °C 0 to 95% RH
Weight & Dimensions (Ø × H)	950 g · 200 × 250 mm

CONFIGURABLE SENSORS

Built-in Sensors	Air Temperature (Internal & External) Relative Humidity · Atmospheric Pressure
Optional Sensors	PM10 · PM4 · PM2.5 · PM1 · VOC Index · CO2 Noise Sensor
Sensor Deck	NO2 · O3 · CO · SO2 · H2S · NO · NH3 · Cl2 · HCl · PH3 · HCN · ETO · H2O2 · VOC (PID)
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 Humidity	 Atmospheric Pressure	
OPTIONAL SENSORS	 Particulate Matter	 VOC Index	 Carbon Dioxide	 Noise Sensor

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

NO₂

Nitrogen Dioxide

O₃

Ozone

CO

Carbon Monoxide

SO₂

Sulfur Dioxide

HCN

Hydrogen Cyanide

H₂S

Hydrogen Sulfide

ETO

Ethylene Oxide

NO

Nitrogen Monoxide

CL₂

Chlorine

HCL

Hydrogen Chloride

PH₃

Phosphine

H₂O₂

Hydrogen Peroxide

NH₃

Ammonia

VOC
PID

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



Field Tripod



Urban Furniture



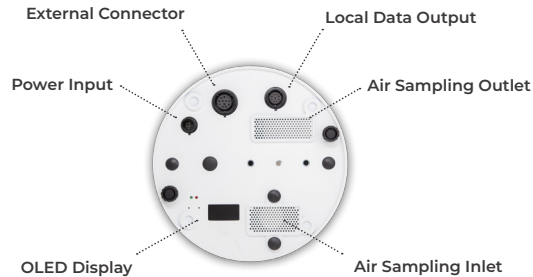
Wall Mount



Public Lighting



Building Facade



Connectivity Block

Multiband Cellular for wide-area data connectivity or Modbus RTU (RS485) for local industrial communication



Plug-and-play installation

Aernode can be deployed in many outdoor settings with a suitable power connection



Accessories

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

Smart Maintenance, Reduced Downtime.

Designed for efficient servicing with flexible options tailored to deployment needs.



In-Field Sensor Kit Replacement



Receive preconfigured
sensor kits



Swap on-site without
specialist tools,
minimizing downtime



Suitable for fleet-wide servicing and
minimizing operational disruption



In-Lab Single Sensor Replacement



Ship the unit to an
authorized service partner



Replace individual
sensors as needed in lab



Cost-effective option for
targeted servicing



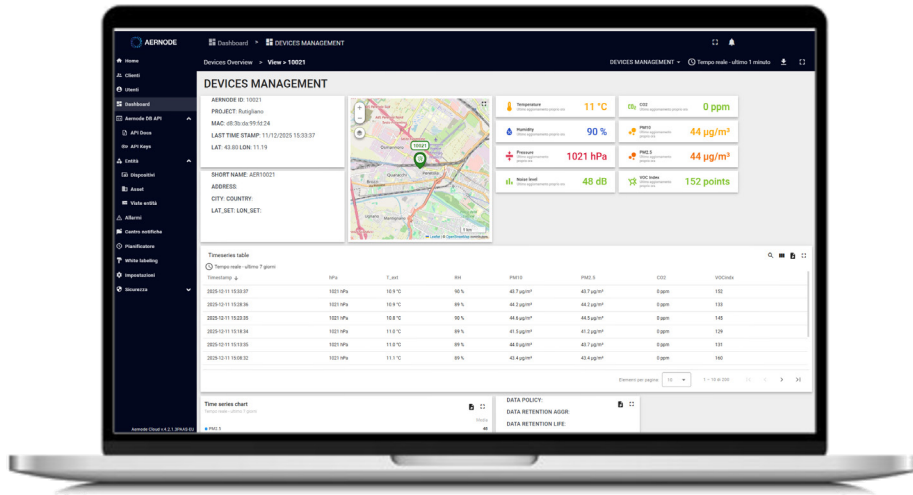
Remote Management

Configure, monitor, and troubleshoot your devices without on-site visits. Remote capabilities include: Provisioning & diagnostics, transmission settings and firmware updates. This can reduce downtime and site visits while supporting scalable network operation.

DATA MANAGEMENT

Connect devices to Aernode Cloud or integrate them with compatible third-party platforms.

Aernode Cloud provides centralized management of the monitoring network: configure devices, manage fleets, apply calibration parameters, and monitor device performance. Export historical data for reporting and integrate with external systems via secure APIs.



Aernode Database

Centralized data backbone for ingestion, storage, and post-processing



Aernode Web App

Operational interface for network supervision and configuration



Aernode API

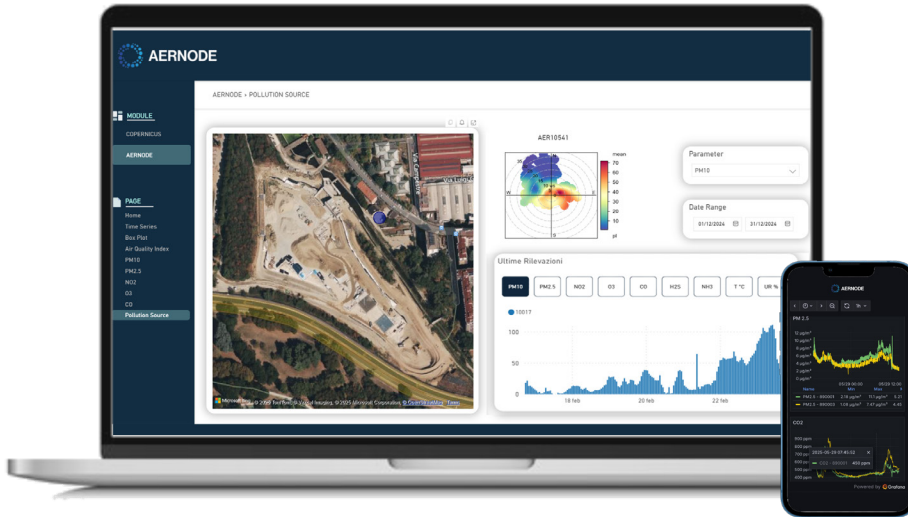
Secure data access and integration layer



DATA REPORTING TOOLS

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.

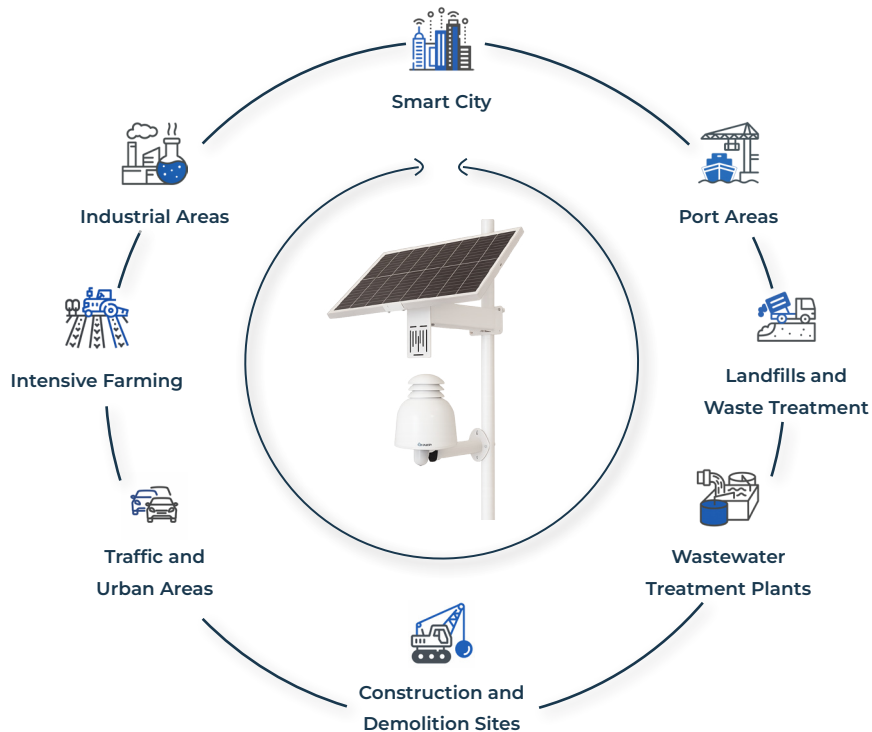


Automated Reporting & Alerts

Scheduled reports and automated alerts based on user-defined thresholds and network status

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 Event Monitoring

Track short-term variations in gases and VOC related parameters that may be associated with odor events



Pollution Hotspot Monitoring

Monitor pollution hotspots and support analysis of dispersion patterns

Aernode is designed for supplementary air quality monitoring. With appropriate QA/QC procedures, including calibration, co-location and data-quality assessment, deployments can be configured to support indicative measurement applications, subject to the applicable data-quality requirements of [Directive \(EU\) 2024/2881](#)

	 Smart City	 Industrial Areas	 Wastewater Treatment Plants	 Traffic and Urban Areas	 Landfills and Waste Treatment	 Port Areas	 Intensive Farming	 Construction & Demolition Sites
PM	●	●	●	●	●	●	●	●
Sound Level				●				●
VOC Index		●	●		●		●	
NO ₂	●	●	●	●	●	●	●	●
O ₃	●			●	●		●	
CO	●	●		●		●		●
SO ₂		●				●		
NO		●	●	●	●	●		●
H ₂ S		●	●		●		●	
NH ₃							●	
VOC (PID)		●	●		●		●	

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.



Sensor Maintenance

Flexible in-lab and field-based servicing options tailored to your needs, supporting long-term operational reliability and consistent data quality.



Data Analysis & Reporting

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



Setup & Configuration

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



Remote Diagnostics

Continuous assistance for remote troubleshooting, firmware updates, and network monitoring, minimizing downtime and site visits.



Dashboard Customization

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



SENSOR SPECIFICATIONS

BUILT-IN SENSORS	Sensor Type	Measurement Range ¹	Recommended Measurement Range ²	Technical Resolution ³	Operational Resolution	LOD ⁴ Limit of Detection	Typical Sensor Life ⁶	Operating RH% range	Operating °C range ⁸
°C Air Temperature	Solid State	- 40 + 80 °C	- 20 + 80 °C	0.1 °C	0.3 °C	n.a.	3 years	n.a.	n.a.
RH Relative Humidity	Solid State	0 - 100 %	0 - 100 %	1 %	1 %	n.a.	3 years	n.a.	n.a.
Pa Atmospheric Pressure	Solid State	300 to 1,100 hPa	300 to 1,100 hPa	1 hPa	1 hPa	n.a.	3 years	0 - 100	-20 +70

CORE SENSOR BOARD	Sensor Type	Measurement Range ¹	Recommended Measurement Range ²	Technical Resolution ³	Operational Resolution	LOD ⁴ Limit of Detection	Typical Sensor Life ⁶	Optimal RH% range ⁷	Operating °C range ⁸
PM10 · PM4 · PM2.5 · PM1 Particulate Matter	OPC Type - S	0-1,000 µg/m3	0-1,000 µg/m3	0.1 µg/m3	1 µg/m3	1 µg/m3	> 5 years	0 - 80	-10 +50
PM10 · PM2.5 · PM1 Particulate Matter	OPC Type - T	0-1,000 µg/m3	0-1,000 µg/m3	0.1 µg/m3	1 µg/m3	1 µg/m3	> 3 years	0 - 95	-20 +70
CO2 Carbon Dioxide	NDIR	400-5,000 ppm	400-5,000 ppm	1 ppm	± 50 ppm	400 ppm	3 years	15 - 90	-30 +50
VOC Index Volatile Organic Compounds	MOX	1-500 Index pts	1-500 Index pts	1 Index pt	1 Index pt	n.a.	3 years	0 - 90	-10 +50
dB Noise Sensor	A-weighted Sound Level Sensor	30-120 dB	30-120 dB	0.5 dB	± 0.5 dB	30 dB	3 years	n.a.	n.a.



SENSOR SPECIFICATIONS

SENSOR DECK Ambient Air		Sensor Type	Measurement Range ¹	Recommended Measurement Range ²	Technical Resolution ³	LOD ⁴ Limit of Detection	LOC ⁵ Lowest Operational Concentration	Typical Sensor Life ⁶	Optimal RH% range ⁷	Operating °C range ⁸
	NO ₂ Nitrogen Dioxide	Electrochemical A4	0-20 ppm	0-540 ppb 0-1,000 µg/m³	1 ppb	5 ppb 9.4 µg/m³	20 ppb 38 µg/m³	2 years	15 - 85	-30 +50
		Electrochemical B4 or AQ7	0-20 ppm			1 ppb 1.9 µg/m³	5 ppb 9.4 µg/m³			
	O ₃ Ozone	Electrochemical A4	0-20 ppm	0-400 ppb 0-800 µg/m³	1 ppb	5 ppb 10 µg/m³	20 ppb 40 µg/m³	2 years	15 - 85	-30 +40
		Electrochemical B4 or AQ7	0-20 ppm			1 ppb 2 µg/m³	5 ppb 10 µg/m³			
	CO Carbon Monoxide	Electrochemical A4	0-500 ppm	0-10 ppm 0-11.5 mg/m³	1 ppb	110 ppb 115 µg/m³	500 ppb 570 µg/m³	2 years	15 - 90	-30 +50
		Electrochemical B4 or AQ7	0-1,000 ppm			40 ppb 46 µg/m³	200 ppb 230 µg/m³			
	SO ₂ Sulfur Dioxide	Electrochemical A4	0-50 ppm	0-488 ppb 0-1,250 µg/m³	1 ppb	5 ppb 13 µg/m³	20 ppb 52 µg/m³	3 years	15 - 90	-30 +50
		Electrochemical B4 or AQ7	0-100 ppm			1 ppb 2.6 µg/m³	5 ppb 13 µg/m³			
	NO Nitrogen Monoxide	Electrochemical A4	0-20 ppm	0-650 ppb 0-800 µg/m³	1 ppb	80 ppb 100 µg/m³	200 ppb 250 µg/m³	2 years	15 - 90	-30 +50
		Electrochemical B4	0-20 ppm			15 ppb 18 µg/m³	50 ppb 60 µg/m³		15 - 85	
	H ₂ S Hydrogen Sulfide	Electrochemical A4	0-50 ppm	0-570 ppb 0-800 µg/m³	1 ppb	5 ppb 7 µg/m³	25 ppb 35 µg/m³	2 years	15 - 90	-30 +50
		Electrochemical B4	0-100 ppm			1 ppb 1.4 µg/m³	10 ppb 14 µg/m³			



SENSOR SPECIFICATIONS

SENSOR DECK Industrial Safety		Sensor Type	Measurement Range ¹	Recommended Measurement Range ²	Technical Resolution ³	LOD ⁴ Limit of Detection	LOC ⁵ Lowest Operational Concentration	Operating Life ⁶	Optimal RH% range ⁷	Operating °C range ⁸
NH₃ Ammonia		Electrochemical BI	0-100 ppm	0-10 ppm 0-7,200 µg/m ³	0.1 ppm	1 ppm 720 µg/m ³	2 ppm 1,440 µg/m ³	2 years	15 - 90	-30 +50
CL₂ Chlorine		Electrochemical BI	0-20 ppm	0-5 ppm 0-14,750 µg/m ³	1 ppb	50 ppb 148 µg/m ³	200 ppb 590 µg/m ³	2 years	15 - 90	-20 +50
HCL Hydrogen Chloride		Electrochemical BI	0-100 ppm	0-10 ppm 0-14,900 µg/m ³	1 ppb	100 ppb 149 µg/m ³	300 ppb 447 µg/m ³	1 year	15 - 90	-30 +50
ETO Ethylene Oxide		Electrochemical BI	0-100 ppm	0-10 ppm 0-18,000 µg/m ³	1 ppb	100 ppb 180 µg/m ³	300 ppb 540 µg/m ³	2 years	15 - 90	-30 +50
HCN Hydrogen Cyanide		Electrochemical BI	0-100 ppm	0-10 ppm 0-11,000 µg/m ³	1 ppb	1 ppm 1,100 µg/m ³	2 ppm 2,200 µg/m ³	2 years	15 - 90	-30 +50
H₂O₂ Hydrogen Peroxide		Electrochemical BI	0-2,000 ppm	0-50 ppm 0-72,500 µg/m ³	1 ppb	500 ppb 725 µg/m ³	1 ppm 1,450 µg/m ³	2 years	15 - 90	-30 +50

* For environmental and process monitoring applications. Not intended as a personal safety gas detector or as a substitute for certified safety instrumentation.



SENSOR SPECIFICATIONS

SENSOR DECK Industrial & Specialty Gas Sensors		Sensor Type	Measurement Range ¹	Technical Resolution ³	LOD ⁴ Limit of Detection	Typical Sensor Life ⁶	Typical Lamp Life Lamp	Optimal RH% range ⁷	Operating °C range ⁸
VOC (PID) * Volatile Organic Compounds		PID HS	0-3+ ppm	1 ppb	0.5 ppb	> 5 years	10,000 hours	0 - 99	0 +40
		PID PPB	0-40 ppm	1 ppb	1 ppb	> 5 years	10,000 hours	0 - 99	-40 +65
		PID WR	0-200 ppm	1 ppb	20 ppb	> 5 years	10,000 hours	0 - 95	-20 +60
		PID A004	0-4 ppm	1 ppb	0.5 ppb	> 5 years	10,000 hours	0 - 95	-20 +60
		PID A020	0-20 ppm	1 ppb	1 ppb	> 5 years	10,000 hours	0 - 95	-20 +60
		PID A040	0-40 ppm	1 ppb	1 ppb	> 5 years	10,000 hours	0 - 95	-20 +60

* PID response is compound-dependent. Concentrations are typically reported as isobutylene equivalents unless a compound-specific response factor is applied.

 Base Station  Core Sensor Board  Sensor Deck Module

Field performance depends on calibration, environmental conditions, cross-sensitivities, sensor ageing, siting and QA/QC procedures.

- Measurement range:** concentration range measured by the sensor. It defines the limits within which the sensor can operate without permanent damage or significant loss of linearity.
- Recommended measurement range:** defines the concentration range within which the sensor operates with optimal accuracy, stability, and data quality;
- Technical resolution:** the smallest unit of measurement that can be indicated by the sensor;
- LOD (Limit of Detection):** the minimum concentration that can be detected as significantly different from zero under defined standard test conditions, based on sensor characteristics and system-level processing;
- LOC (Lowest Operational Concentration):** the recommended lowest concentration for operational field use, considering sensor drift, cross-sensitivities, and environmental effects; measurement uncertainty increases below this level;
- Typical Sensor Life:** the expected lifetime of the sensor under normal operating conditions;
- Optimal humidity range:** the range of humidity levels within which the sensor delivers optimal performance; uncertainty increases outside this range;
- Operating temperature range:** the temperature range within which the sensor can operate within the specified temperature range; measurement performance and uncertainty may vary across the range



KEY BENEFITS

Designed for real-world deployments, Aernode combines modular hardware, remote management and flexible integration to support monitoring projects across a wide range of scales and applications.



Modular System Design

Modular hardware, remote management and flexible integration to support monitoring projects across a wide range of scales and applications.



Configurable for Diverse Applications

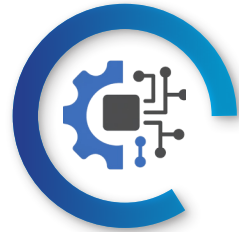


Easy Servicing & Maintenance

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



Reduced Service Effort



Open Architecture

Use Aernode with existing infrastructure or with Aernode data and reporting tools.



Flexible Integration Architecture



WORK WITH AERNODE

DISCOVER OUR PARTNER PROGRAM

BUILD AIR QUALITY SOLUTIONS WITH AERNODE

PARTNER WITH AERNODE TO DEVELOP AND DELIVER SCALABLE AIR QUALITY MONITORING
SOLUTIONS ACROSS LOCAL AND INTERNATIONAL MARKETS

PARTNER PROFILES

Aernode supports multiple models of commercial partnership: channel distribution, value-added reselling, system integration, OEM and white-label, and referral or agency arrangements.



Distributors



Monitoring Service
Providers



OEM Partners &
System Integrators



Consultants &
Agencies



INNOVATION AND RELIABILITY FOR INDUSTRY AND THE ENVIRONMENT



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

 Email: info@aernode.io

 Website: www.aernode.io



www.aernode.io



info@aernode.io