

ENSENSIA

Datasheet

The Smart Way to Monitor Air



Description

ENSENSIA is a comprehensive air quality monitoring solution designed for professional applications in both indoor and outdoor environments. It integrates advanced IoT sensors, data analytics algorithms, and a cloud-based platform to deliver precise and continuous measurements of key air quality pollutants and parameters.

Two models are available: **ENSENSIA**, a full version equipped with up to 12 sensors for extensive pollution detection, and **ENSENSIA Mini**, a version optimized for indoor spaces with up to 5 key pollutant sensors. Both models support real-time monitoring, alerts, reporting and data visualization through the ENSENSIA Cloud Platform.

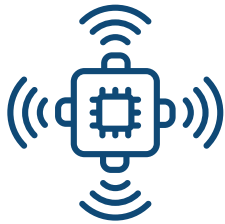
Applications

-  Indoor air quality monitoring in offices, schools & healthcare facilities
-  Outdoor air pollution monitoring & Smart City networks
-  Industrial site and workplace exposure assessment
-  Research studies & field campaigns on air quality & pollutants



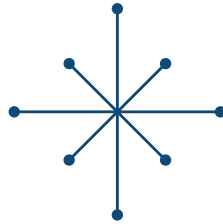
Key Features

Designed for flexibility and precision, ENSENSIA integrates cutting-edge sensors, AI-driven calibration and IoT connectivity to deliver reliable and scalable air quality monitoring in any environment.



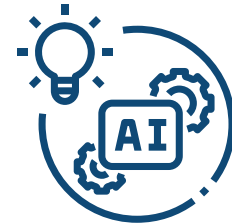
Multi-pollutant sensing

Measures key air quality pollutants and parameters, customizable per device and application.



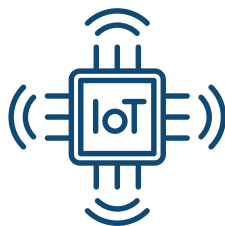
Low cost & high scalability

Ideal for deployment across multiple space or buildings with minimal infrastructure.



Machine Learning Calibration

Continuously corrects sensor biases to improve measurement accuracy over time.



Plug-and-play IoT integration

Easily connects via Wi-Fi, 4G, or Ethernet for seamless cloud data transmission.



Edge-computing & Intelligence

Allows dynamic calibration, remote management and updates

Accurate data. Continuous insight. Confident decisions

Sensor Configuration

The ENSENSIA system integrates a comprehensive set of sensors for advanced air-quality monitoring.



Sensor Name	ENSENSIA
CO	✓
SO ₂	✓
NO ₂	✓
NO	✓
O ₃	✓
CO ₂	✓
tVOC	✓
PM _{2.5}	✓
Temperature	✓
Humidity	✓
Pressure	✓

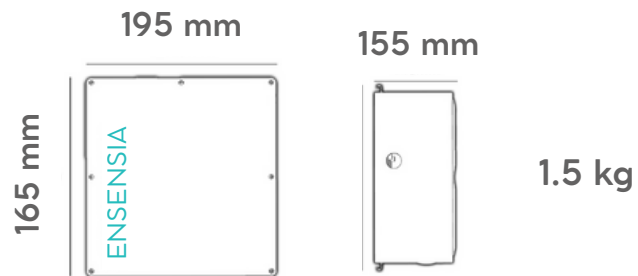
Sensor selection can be customized depending on project requirements, based on the ENSENSIA full sensor range. All sensors are factory-calibrated and managed through the ENSENSIA Cloud Platform.

General Information

Features

Indoor & Outdoor Use
Material: ASA EVO plastic with UV protection
Power button with LED indicator
GPS (optional)
CE mark

Dimensions & Weight



Power

802.3af PoE
37–57V DC, Class 2 device

Battery

2 x Li-Ion 5000mAh

Connectivity

2.4 GHz and 5.0 GHz IEEE 802.11ax wireless
Gigabit Ethernet
Cellular 4G/LTE (optional)
LoRaWAN (optional)

Communication

MQTT
SSH with 2FA
Web-based platform

Measurements Frequency

Sampling interval: 1 - 2 seconds
Averaging interval: 2 minutes (adjustable)
Sending interval: 2 minutes (adjustable)

Operating conditions

Operating temperature range: -40 to 60 °C
Operating RH range: 0 - 99 % RH

Sensors

CO

Sensor Technology: Electrochemical
Units: ppb / Range 0 to 10,000 ppb
Lifespan: >36 Months

NO

Sensor Technology: Electrochemical
Units: ppb / Range 0 to 400 ppb
Lifespan: >36 Months

NO₂

Sensor Technology: Electrochemical
Units: ppb / Range 0 to 400 ppb
Lifespan: >36 Months

O₃

Sensor Technology: Electrochemical
Units: ppb / Range 0 to 200 ppb
Lifespan: >36 Months

SO₂

Sensor Technology: Electrochemical
Units: ppb / Range 0 to 20 ppb
Lifespan: >36 Months

CO₂

Sensor Technology: NDIR
Units: ppm / Range 400 to 10,000 ppm
Lifespan: >15 years

tVOC

Sensor Technology: Electrochemical
Units: ppb / Range 0 to 15,000 ppb
Lifespan: >36 months

PM_{2.5}

Sensor Technology: Optical
Units: µg m⁻³ / Range 0 to 500 µg m⁻³
Lifespan: >5 years

Sensors

Pressure

Units: hPa / Range 300 to 1100 hPa
Lifespan: >15 years

Temperature

Units: °C / Range: -40 to 85 °C
Lifespan: >15 years

Humidity

Units: % / Range: 0 to 100%
Lifespan: >15 years

Operation Guide & Precautions

Do not blow air from the bottom of the device, where the sensors are placed.

Exposure to direct air flow will affect the precision of the readings.

The device operates in environments where the temperature ranges between 0 and 40 °C.

Warm-up period is 3 hours. The NO and tVOC sensors may require more than 8 hours to provide stable responses.

VOC species estimations are applicable for indoor purposes and work best in well-ventilated rooms.

After installing, power-on the device by pressing the power button on the left. The device responds with a reading after 7 minutes tops.

Data

All readings are stored on the SD card of the device. There is enough capacity for at least 5 years of persistent operation.

Data are automatically uploaded to the ENSENSIA Cloud for real-time monitoring and analysis, and can be downloaded via an API or ENSENSIA's cloud-based platform.

Calibration

The sensors are factory-calibrated, with Machine Learning algorithms continuously optimizing data accuracy. Regulatory instrumentations and frequent co-locations take place to persistently update the algorithms. The user can calibrate the sensors applying a linear formula to compensate for sensor to drift and ageing.

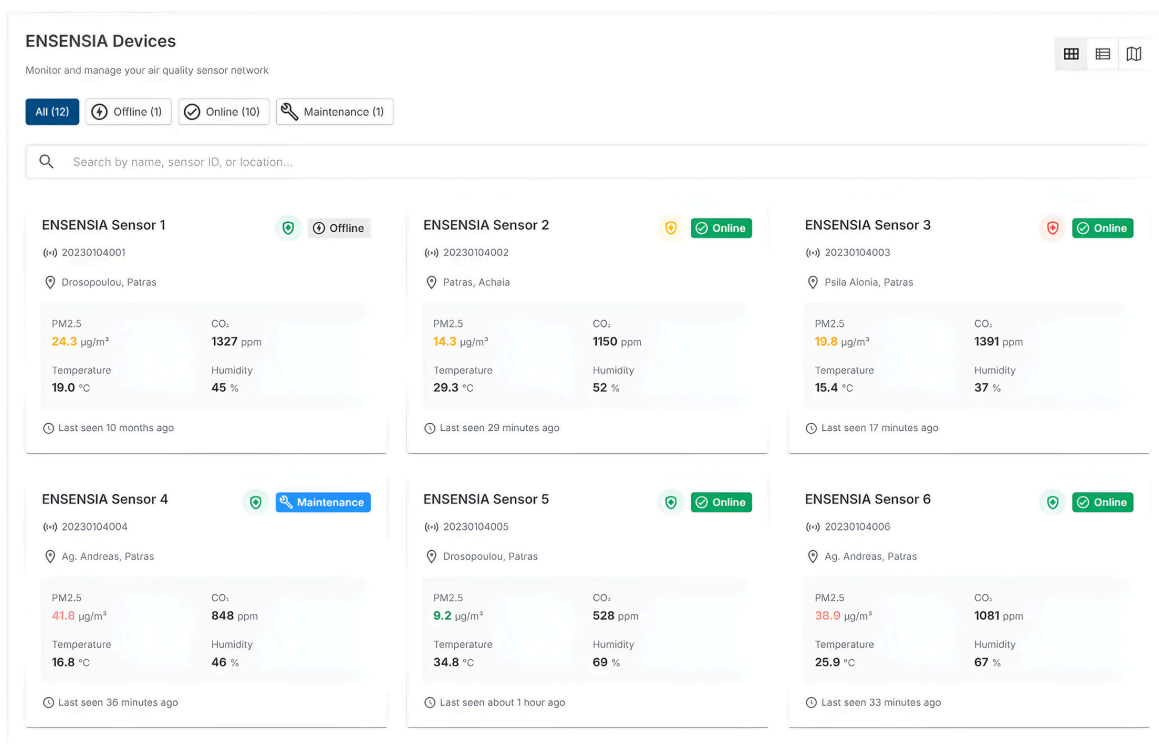
Cloud Dashboard

Visualization: Access live and historical air quality data on your dashboard.

Data download: Export environmental reports via the web interface or REST API. Custom reporting options are also available for specific use cases.

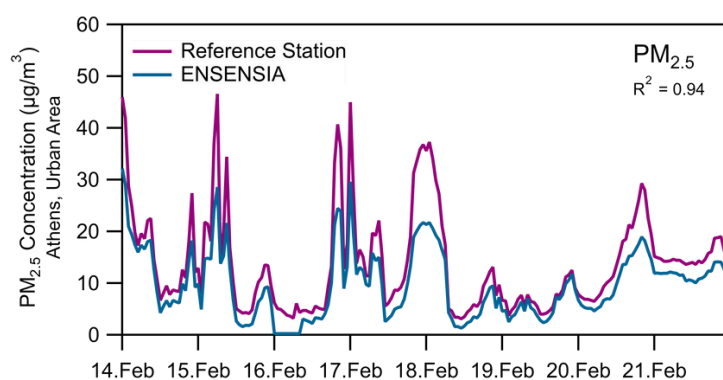
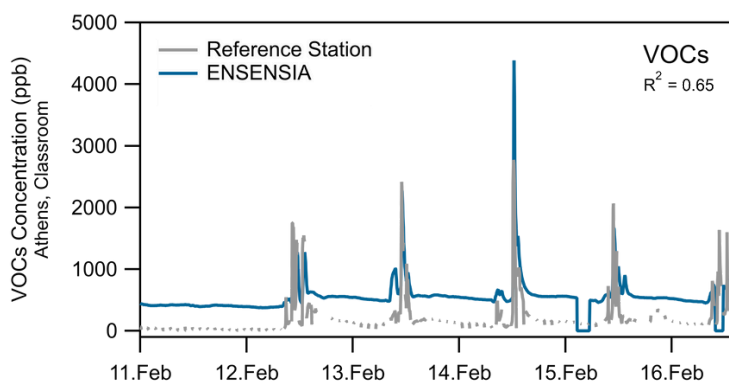
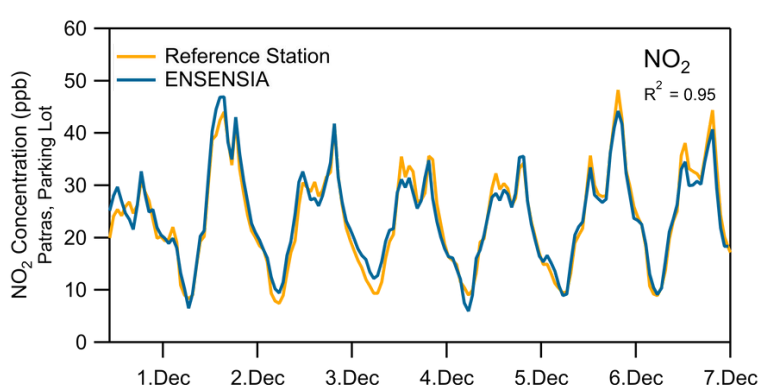
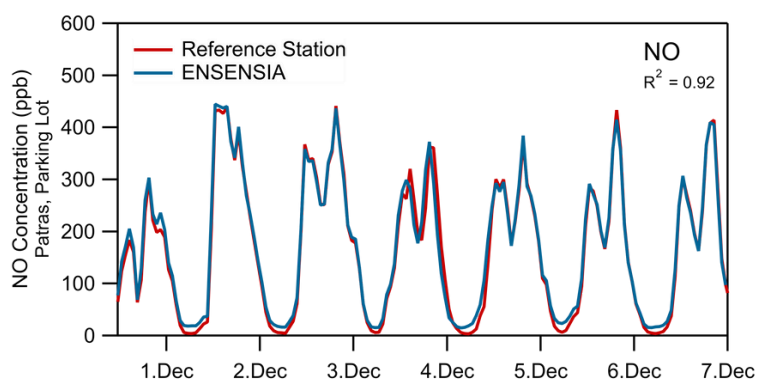
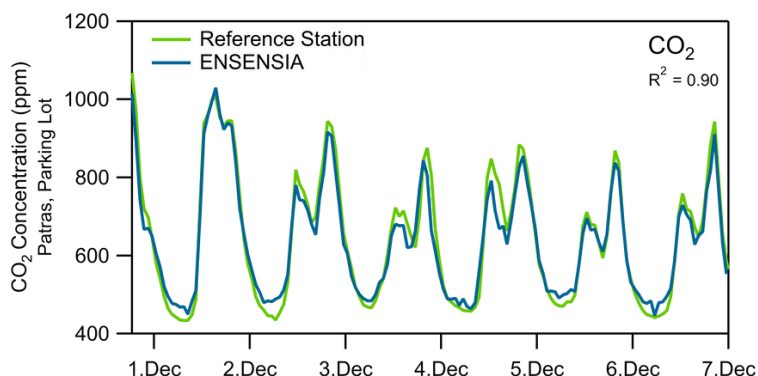
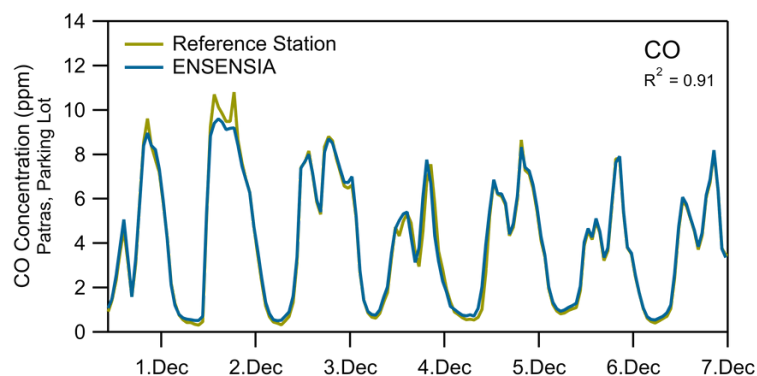
Device management: Configure alerts, adjust measurement parameters, and perform electrochemical sensor adjustments.

Machine Learning algorithms are continuously applied to the sensor data to correct biases and deviations, ensuring persistent calibration and improving measurement precision.



For more information and visuals about our cloud-based platform, visit: <https://emairging.eu/cloud-based-platform/> .

Evidence of accuracy



Disclaimer: Sensor performance and correlation results may vary depending on the measurement environment and the prevailing ambient conditions.

The graphs shown correspond to outdoor field measurements using 1-hour averaged data, and actual performance may differ under different conditions.

Warranty

ENSENSIA devices are covered by a 2-year warranty against defects in materials or workmanship under normal use.

Investing in health pays back

Clean Air
Healthy Future

EmAIRging P.C.

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For more information visit

Web: emairging.eu

