



# DATASHEET

# kunak air

The most advanced and reliable solution for air quality monitoring





# Kunak AIR Pro

Air quality monitor



## Measure air pollution with accurate and reliable data.

### SENSOR BASED | NEAR REFERENCE DATA

Simultaneously monitor particles and up to 5 gas pollutants from our wide portfolio of sensors, and obtain continuous, real-time data on ambient air. Kunak AIR Pro delivers near-reference measurements in multiple environments, providing reliable insights for air quality monitoring.

All collected data can be visualised and analysed anytime, anywhere through the Kunak AIR Cloud web platform.

**Get the most versatile solution.** Our plug & play gas cartridge technology lets you easily combine and switch sensors at any time to fit your project needs.

**Data quality is guaranteed.** All of our sensors are factory calibrated and tested according to the European CEN/TS 17660 and EPA/600/R protocols, metrics and target values for air sensors.

**Data traceability** to reference standards: European Directive 2024/2881 and USEPA 40 CFR Part 53.



Patented plug&play cartridge system



Up to 16 pollutants Combine 5



Proven accuracy (EPA, Mcerts, Airlab, CEN/TS 17660)



Traceable back to reference standards



Easy & remote maintenance



Autonomous operation

## Simplify your daily operations. Make better decisions.



Kunak AIR Pro air quality station was awarded **The Most Accurate Multi Pollutant Sensor** in 2021 and 2023 AIRLAB Microsensors Challenge editions organised by Airparif.

Our solution has been tested by the world's leading air quality experts:





Kunak AIR stations offer performance levels close to reference instruments, providing reliable, accurate data according to [Class 1 of the European CEN/TS 17660](#); protocols, metrics and target values of [EPA/600/R-20/279](#) for O<sub>3</sub>, [EPA/600/R-23/14](#) for NO<sub>2</sub>, CO and SO<sub>2</sub>, [EPA/600/R-20/280](#) for PM<sub>2.5</sub> and [EPA/600/R-23/145](#) for PM<sub>10</sub>.

Also, data is traceable to international recognised standards ([European Directive 2024/2881](#) and [USEPA 40 CFR Part 53](#)).

## Specifications

Dimensions	257 x 270 x 225 mm
Weight	< 3.5 kg
Enclosure	PMMA & Polycarbonate & Stainless steel
Operating temp.	-40 °C to 60°C
Operating RH	0 to 99 %RH
IP rating	IP65
Battery	Lithium 26 Ah
External supply	7 - 12 Vdc. charger or solar panel
Autonomy	24/7 with charger or solar panel 9-30 days operation on battery (depending on configuration)
Power consumption	0.08 - 1.2W (depending on configuration)
Communications	Multi-Band 2G/3G/4G, Ethernet and Modbus RTU Slave
GNSS	GPS and GLONASS

Gas sensors	CO, NO, NO <sub>2</sub> , NO <sub>x</sub> , O <sub>3</sub> , H <sub>2</sub> S, CO <sub>2</sub> , SO <sub>2</sub> , NH <sub>3</sub> , VOC, NMHC, CH <sub>4</sub> , HCl, HCN, HF, Cl <sub>2</sub> /ClO <sub>2</sub> and O <sub>2</sub>
PM sensor	PM <sub>1</sub> , PM <sub>2.5</sub> , PM <sub>4</sub> , PM <sub>10</sub> , TSP and TPC
Internal status	Temperature, battery, charging voltage and current, and signal
Built-in sensors	Temperature, humidity, atmospheric pressure and dew point
Connectors	#1: Power 7V to 12V or Ethernet #2: Modbus RTU slave #3: Sound meter, UV #4: WBGT, Pyranometer, Modbus RTU master #5: Anemometer & Rain gauge #Wifi: Ultrafine particle sensor (UFP)
Sampling frequencies	3Hz gases, 0.25Hz particles
Sampling periods	From 10 seconds to a maximum of 24 hours
Sending periods	From 5 minutes to a maximum of 24 hours
Remote management	Bidirectional communications Remote configuration and calibration
SIM	Embedded eSIM and SIM extra holder



# Kunak AIR Lite

Air quality station



## Take quick and effective actions based on accurate and reliable data.

INDUSTRY GRADE DESIGN | NEAR REFERENCE DATA

Monitor pollution levels and make timely, effective decisions to protect human health and the environment. With the Kunak AIR Lite monitoring station, you get accurate air quality data on multiple pollutants, easily, reliably and cost effectively.

Designed for industrial applications and large-scale urban deployments, Kunak AIR Lite measures particulate matter (PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub>) along with up to 2 gases from our wide portfolio of sensors, simultaneously and in real time.

Our patented plug & play gas cartridge technology lets you replace cartridges easily, without returning the device to the factory. Perfect for projects where up to 2 gases and particles need to be monitored.

**Data quality is guaranteed.** All of our sensors are factory calibrated and tested according to the European CEN/TS 17660 and EPA/600/R protocols, metrics and target values for air sensors.

**Data traceability** to reference standards: European Directive 2024/2881 and USEPA 40 CFR Part 53.



Patented plug&play cartridge system



Up to 16 pollutants Combine 2



Proven accuracy (EPA, Airlab, CEN/TS 17660)



Traceable back to reference standards



Easy & remote maintenance



Autonomous operation



Kunak AIR Lite air quality station was awarded **The Most Accurate Multi Pollutant Sensor** in the latest AIRLAB Microsensors Challenge edition organised by Airparif.

Our solution has been tested by the world's leading air quality experts:





 Kunak AIR stations offer performance levels close to reference instruments, providing reliable, accurate data according to [Class 1 of the European CEN/TS 17660](#); protocols, metrics and target values of [EPA/600/R-20/279](#) for O<sub>3</sub>, [EPA/600/R-23/14](#) for NO<sub>2</sub>, CO and SO<sub>2</sub>, [EPA/600/R-20/280](#) for PM<sub>2.5</sub> and [EPA/600/R-23/145](#) for PM<sub>10</sub>.

Also, data is traceable to international recognised standards ([European Directive 2024/2881](#) and [USEPA 40 CFR Part 53](#)).

## Specifications

Dimensions	200 x 153 x 185 mm
Weight	< 2.3 kg
Enclosure	PMMA & Polycarbonate & Stainless steel
Operating temp.	-40 °C to 60°C
Operating RH	0 to 99 %RH
IP rating	IP65
Battery	Lithium 20 Ah
External supply	7 - 12 Vdc. charger or solar panel
Autonomy	24/7 with charger or solar panel 9-30 days operation on battery (depending on configuration)
Power consumption	0.08 - 0.55W (depending on configuration)
Communications	Multi-Band 2G/3G/4G, Ethernet and Modbus RTU Slave
GNSS	GPS and GLONASS

Gas sensors	CO, NO, NO <sub>2</sub> , NO <sub>x</sub> , O <sub>3</sub> , H <sub>2</sub> S, CO <sub>2</sub> , SO <sub>2</sub> , NH <sub>3</sub> , VOC, NMHC, CH <sub>4</sub> , HCl, HCN, HF, Cl <sub>2</sub> /ClO <sub>2</sub> and O <sub>2</sub>
PM sensor	PM <sub>1</sub> , PM <sub>2.5</sub> , and PM <sub>10</sub>
Internal status	Temperature, battery, charging voltage and current, and signal
Built-in sensors	Temperature, humidity, atmospheric pressure and dew point
Connectors	Option 1: Anemometer & Rain gauge Option 2: Modbus RTU master Option 3: Sound meter Option 4: Ethernet Option 5: Modbus RTU slave Wifi: Ultrafine particle sensor (UFP)
Sampling frequencies	3Hz gases, 1Hz particles
Sampling periods	From 10 seconds to a maximum of 24 hours
Sending periods	From 5 minutes to a maximum of 24 hours
Remote management	Bidirectional communications Remote configuration and calibration
SIM	Embedded eSIM and SIM extra holder



# Smart gas cartridges

## Description

Kunak AIR stations are sensor-based devices featuring slots to insert the smart gas cartridges. These cartridges solve many of the known issues of sensor technology as sensor variability, factory and field calibration, automatic data invalidation, sensor replacement, network operation and maintenance work.

The smart gas cartridges ensure measurement control throughout the life cycle of each sensor.

Kunak AIR stations are the most sustainable solution on the market with most of the electronic and mechanical parts designed to be reused and recycled.



### Near reference data

Accurate real-time pollutant value without the need for external instruments or reference data



### Traceable QC & QA

Each cartridge is calibrated and validated individually in lab against traceable reference standards.



### Low intra-variability

Consistent readings across all equipment and locations, correcting implicit sensor variability.



### Endless combinations

Combine your cartridges according to your needs in just 2 minutes.

## Patented GasPlug™ technology

All cartridges share the same form factor and can be inserted into any available slot. Each cartridge integrates a sensor mounted on a PCB that stores all relevant data, including type, age, and factory calibration.

Once connected, the base station automatically reads this information, configures itself accordingly, and operates within seconds.

**20+** cartridges  
tailored for every project need



Say hello to a revolutionary gas sensor that fits in the palm of your hand.



	CO	NO	NO <sub>2</sub>	O <sub>3</sub>	SO <sub>2</sub>	H <sub>2</sub> S	CO <sub>2</sub>	CH <sub>4</sub>
<b>Type</b>	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Non-dispersive infrared (NDIR)	N. A. <sup>(C)</sup> TDLAS <sup>(D)</sup>
<b>Unit of measurement</b>	µg/m <sup>3</sup> , ppb <sup>(A)</sup> mg/m <sup>3</sup> , ppm <sup>(B)</sup>	µg/m <sup>3</sup> , ppb <sup>(A)</sup> mg/m <sup>3</sup> , ppm <sup>(B)</sup>	mg/m <sup>3</sup> , ppm	mg/m <sup>3</sup> , ppm				
<b>Measurement range <sup>(1)</sup></b>	0 - 12,000 ppb <sup>(A)</sup> 0 - 500 ppm <sup>(B)</sup>	0-5,000 ppb	0-5,000 ppb	0-2,000 ppb	0-10,000 ppb	0 - 2,000 ppb <sup>(A)</sup> 0 - 20 ppm <sup>(B)</sup>	0-5,000 ppm	2-300 ppm <sup>(C)</sup> 0-1,000 ppm <sup>(B)</sup>
<b>Resolution <sup>(2)</sup></b>	1 ppb <sup>(A)</sup> 0.01 ppm <sup>(B)</sup>	1 ppb	1 ppb	1 ppb	1 ppb	1 ppb <sup>(A)</sup> 0.01 ppm <sup>(B)</sup>	0.01 ppm	0.01 ppm <sup>(C)</sup> 0.1 ppm <sup>(B)</sup>
<b>Operating temp. range <sup>(3)</sup></b>	-30 to 50 °C	-30 to 45 °C	-30 to 45 °C	-30 to 45 °C	-30 to 40 °C	-30 to 50 °C	-20 to 50 °C	-30 to 60 °C
<b>Operating RH range <sup>(4)</sup></b>	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH	10 to 99 %RH <sup>(C)</sup> 0 to 98 %RH <sup>(B)</sup>
<b>Recommended RH range <sup>(5)</sup></b>	15 to 90 %RH	15 to 85 %RH	15 to 85 %RH	15 to 85 %RH	15 to 90 %RH	15 to 90 %RH	15 to 95 %RH	15 to 90 %RH <sup>(C)</sup>
<b>Operating life <sup>(6)</sup></b>	> 24 months	> 24 months	> 24 months	> 24 months	> 24 months	> 24 months	> 4 years	> 24 months <sup>(C)</sup> > 5 years <sup>(D)</sup> (10 years manufacturer)
<b>Guarantee range <sup>(7)</sup></b>	1,000 ppm	20 ppm	20 ppm	20 ppm	100 ppm	100 ppm	—	10,000 ppm
<b>LOD - Limit of detection <sup>(8)</sup></b>	10 ppb <sup>(A)</sup> 0.02 ppm <sup>(B)</sup>	2 ppb	2 ppb	3 ppb	3 ppb	2 ppb <sup>(A)</sup> 0.01 ppm <sup>(B)</sup>	—	< 0.05 ppm
<b>Repeatability <sup>(9)</sup></b>	20 ppb <sup>(A)</sup> 0.05 ppm <sup>(B)</sup>	4 ppb	4 ppb	4 ppb	5 ppb	4 ppb <sup>(A)</sup> 0.01 ppm <sup>(B)</sup>	—	< 0.35 ppm <sup>(C)</sup> < 0.30 ppm <sup>(B)</sup>
<b>Response time <sup>(10)</sup></b>	< 30 sec <sup>(A)</sup> < 180 sec <sup>(B)</sup>	< 30 sec	< 60 sec	< 70 sec	< 60 sec	< 60 sec	< 30 sec	< 120 sec <sup>(C)</sup> < 30 sec <sup>(B)</sup>
<b>Typical accuracy <sup>(12)</sup></b>	± 80 ppb <sup>(A)</sup> ± 0.1 ppm <sup>(B)</sup>	±4 ppb	±5 ppb	±8 ppb	±15 ppb	± 10 ppb <sup>(A)</sup> ± 0.05 ppm <sup>(B)</sup>	±20 ppm	±1 ppm+ 10% of reading <sup>(C)</sup> ±0.5 ppm + 1% of reading <sup>(B)</sup>
<b>Typical precision - R<sup>2</sup> <sup>(11)</sup></b>	> 0.85	> 0.9	> 0.85	> 0.9	> 0.7	> 0.75	> 0.8	> 0.85 <sup>(C)</sup> > 0.90 <sup>(B)</sup>
<b>Typical slope <sup>(11)</sup></b>	0.78 - 1.29	0.9 - 1.12	0.78 - 1.29	0.85 - 1.18	0.78 - 1.29	0.78 - 1.29	0.6 - 1.66	—
<b>Typical intercept (a) <sup>(11)</sup></b>	-50 ppb ≤ a ≤ +50 ppb <sup>(A)</sup> -0.1 ppm ≤ a ≤ +0.1 ppm <sup>(B)</sup>	-2 ppb ≤ a ≤ +2 ppb	-4 ppb ≤ a ≤ +4 ppb	-3 ppb ≤ a ≤ +3 ppb	-5 ppb ≤ a ≤ +5 ppb	-5 ppb ≤ a ≤ +5 ppb <sup>(A)</sup> -0.05 ppm ≤ a ≤ +0.05 ppm <sup>(B)</sup>	-170 ppm ≤ a ≤ 170 ppm	—
<b>DQO - Typical U(exp) <sup>(13)</sup></b>	< 20%	< 20%	< 25%	< 20%	< 25%	-	—	—
<b>Typical intra-model variability <sup>(14)</sup></b>	< 3 ppb <sup>(A)</sup> < 0.05 ppm <sup>(B)</sup>	< 1 ppb	< 1 ppb	< 1 ppb	< 3 ppb	< 2 ppb <sup>(A)</sup> < 0.02 ppm <sup>(B)</sup>	< 0.5 ppm	< 0.3 ppm <sup>(C)</sup>

	VOC	NMHC	NH <sub>3</sub>	HCl	HCN	HF	Cl <sub>2</sub> - ClO <sub>2</sub>	O <sub>2</sub>
<b>Type</b>	Photoionization detector	N. A.	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical	Electrochemical
<b>Unit of measurement</b>	µg/m <sup>3</sup> , ppb <sup>(A)</sup> mg/m <sup>3</sup> , ppm <sup>(B)</sup>	µg/m <sup>3</sup> , ppb	mg/m <sup>3</sup> , ppm	mg/m <sup>3</sup> , ppm	mg/m <sup>3</sup> , ppm	mg/m <sup>3</sup> , ppm	mg/m <sup>3</sup> , ppm	%
<b>Measurement range<sup>(1)</sup></b>	0 - 3,000 ppb <sup>(A)</sup> 0 - 40 ppm <sup>(B)</sup>	0-5,000 ppb	0-50 ppm <sup>(A)</sup> 0 - 1,500 ppm <sup>(B)</sup>	0-20 ppm	0-50 ppm	0-10 ppm	0-20 ppm	0-30 %
<b>Resolution<sup>(2)</sup></b>	1 ppb <sup>(A)</sup> 0.01 ppm <sup>(B)</sup>	1 ppb	0.01 ppm	0.01 ppm	0.01 ppm	0.01 ppm	0.01 ppm	0.01 %
<b>Operating temp. range<sup>(3)</sup></b>	-40 to 60 °C	-30 to 60 °C	-10 to 50 °C <sup>(A)</sup> -20 to 45 °C <sup>(B)</sup>	-20 to 50 °C	-20 to 45 °C	-20 to 50 °C	-20 to 50 °C	-30 to 50 °C
<b>Operating RH range<sup>(4)</sup></b>	0 to 99% RH	10 to 99 %RH	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH	0 a 99 %RH	0 to 99 %RH (short periods)
<b>Recommended RH range<sup>(5)</sup></b>	0 to 99% RH	15 to 90 %RH	15 to 90 %RH	15 to 90 %RH	15 to 90 %RH	15 to 90 %RH	15 a 90 %RH	5 to 95 %RH
<b>Operating life<sup>(6)</sup></b>	10,000 hours	> 2 years	> 24 months	> 24 months	> 24 months	> 24 months	> 24 months	> 4 years
<b>Guarantee range<sup>(7)</sup></b>	50 ppm <sup>(A)</sup> 60 ppm <sup>(B)</sup>	30 ppb	100 ppm <sup>(A)</sup> 5,000 ppm <sup>(B)</sup>	200 ppm	200 ppm	50 ppm	250 ppm	50 %
<b>LOD - Limit of detection<sup>(8)</sup></b>	1 ppb <sup>(A)</sup> 0.01 ppm <sup>(B)</sup>	5 ppb	0.02 ppm <sup>(A)</sup> 0.15 ppm <sup>(B)</sup>	0.01 ppm	0.02 ppm	0.02 ppm	0.01 ppm	—
<b>Repeatability<sup>(9)</sup></b>	5 ppb <sup>(A)</sup> 0.02 ppm <sup>(B)</sup>	6 ppb	0.03 ppm <sup>(A)</sup> 0.5 ppm <sup>(B)</sup>	0.02 ppm	0.03 ppm	—	—	—
<b>Response time<sup>(10)</sup></b>	< 12 sec <sup>(A)</sup> < 10 sec <sup>(B)</sup>	< 120 sec	< 45 sec <sup>(A)</sup> < 90 sec <sup>(B)</sup>	< 45 sec	< 160 sec	< 120 sec	< 60 sec	< 10 sec
<b>Typical accuracy<sup>(12)</sup></b>	—	—	±0.5 ppm <sup>(A)</sup> ±1.5 ppm <sup>(B)</sup>	±0.1 ppm	±0.1 ppm	±0.1 ppm	±0.03 ppm	±0.3 %
<b>Typical intra-model variability<sup>(14)</sup></b>	< 3 ppb <sup>(A)</sup> < 0.1 ppm <sup>(B)</sup>	< 3 ppb	< 0.1 ppm <sup>(A)</sup> < 0.2 ppm <sup>(B)</sup>	< 0.1 ppm	< 0.1 ppm	< 0.1 ppm	< 0.01 ppm	0.1 %

	PM <sub>1</sub>	PM <sub>2.5</sub>	PM <sub>4</sub>	PM <sub>10</sub>	TSP	TPC
Type	Optical particle counter	Optical particle counter	Optical particle counter	Optical particle counter	Optical particle counter	Optical particle counter
Unit of measurement	µg/m <sup>3</sup>	µg/m <sup>3</sup>	µg/m <sup>3</sup> (A)	µg/m <sup>3</sup> (A)	µg/m <sup>3</sup> (A)	counts/cm <sup>3</sup> (A)
Measurement range (1)	0 - 1,000 µg/m <sup>3</sup>	0 - 2,000 µg/m <sup>3</sup> (A) 0 - 1,000 µg/m <sup>3</sup> (B)	0 - 2,000 µg/m <sup>3</sup> (A)	0 - 10,000 µg/m <sup>3</sup> (A) 0 - 1,000 µg/m <sup>3</sup> (B)	0 - 15,000 µg/m <sup>3</sup> (A)	0 - 8,000 counts/cm <sup>3</sup> (A)
Resolution (2)	1 µg/m <sup>3</sup>	1 µg/m <sup>3</sup>	1 µg/m <sup>3</sup> (A)	1 µg/m <sup>3</sup>	1 µg/m <sup>3</sup> (A)	1 counts /cm <sup>3</sup> (A)
Operating temp. range (3)	-20 to 50 °C (A) ** -10 to 60 °C (B)	-20 to 50 °C (A) ** -10 to 60 °C (B)	-20 to 50 °C (A) **	-20 to 50 °C (A) ** -10 to 60 °C (B)	-20 to 50 °C (A) **	-20 to 50 °C (A) **
Operating RH range (4)	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH (A)	0 to 99 %RH	0 to 99 %RH (A)	0 to 99 %RH (A)
Recommended RH range (5)	0 to 95 %RH	0 to 95 %RH	0 to 95 %RH (A)	0 to 95 %RH	0 to 95 %RH (A)	0 to 95 %RH (A)
Operating life (6)	> 24 months	> 24 months	> 24 months (A)	> 24 months	> 24 months (A)	> 24 months (A)
LOD - Limit of Detection (6)	0.5 µg/m <sup>3</sup>	0.5 µg/m <sup>3</sup>	0.5 µg/m <sup>3</sup> (A)	0.5 µg/m <sup>3</sup>	1 µg/m <sup>3</sup> (A)	—
Repeatability (9)	2 µg/m <sup>3</sup> (A) 3 µg/m <sup>3</sup> (B)	3 µg/m <sup>3</sup>	3 µg/m <sup>3</sup> (A)	5 µg/m <sup>3</sup> (A) 6 µg/m <sup>3</sup> (B)	6 µg/m <sup>3</sup> (A)	—
Response Time (10)	< 10 sec	< 10 sec	< 10 sec (A)	< 10 sec	< 10 sec (A)	< 10 sec (A)
Typical accuracy (12)	±2 µg/m <sup>3</sup> (A) ±3 µg/m <sup>3</sup> (B)	±3 µg/m <sup>3</sup>	±3 µg/m <sup>3</sup> (A)	±4 µg/m <sup>3</sup> (A) ±6 µg/m <sup>3</sup> (B) *	±6 µg/m <sup>3</sup> (A)	—
Typical precision - R <sup>2</sup> (11)	> 0.9 (A) > 0.85 (B)	> 0.8 (A) > 0.8 (B)	> 0.8 (A)	> 0.7 (A) > 0.5 (B) *	> 0.7 (A)	> 0.8 (A)
Typical slope (11)	0.85 - 1.18 (A) 0.80 - 1.25 (B)	0.85 - 1.18 (A) 0.83 - 1.20 (B)	0.85 - 1.18 (A)	0.85 - 1.18 (A) 0.75 - 1.35 (B) *	0.85 - 1.18 (A)	—
Typical intercept (a) (11)	-1.8 µg/m <sup>3</sup> ≤ a ≤ +1.8 µg/m <sup>3</sup> (A) -2 µg/m <sup>3</sup> ≤ a ≤ +2 µg/m <sup>3</sup> (B)	-2 µg/m <sup>3</sup> ≤ a ≤ +2 µg/m <sup>3</sup> (A) -3 µg/m <sup>3</sup> ≤ a ≤ +3 µg/m <sup>3</sup> (B)	-2 µg/m <sup>3</sup> ≤ a ≤ +2 µg/m <sup>3</sup> (A)	-3 µg/m <sup>3</sup> ≤ a ≤ +3 µg/m <sup>3</sup> (A) -9 µg/m <sup>3</sup> ≤ a ≤ +9 µg/m <sup>3</sup> (B) *	-4 µg/m <sup>3</sup> ≤ a ≤ +4 µg/m <sup>3</sup> (A)	—
DQO - Typical U (exp) (13)	< 50%	< 35%	< 50% (A)	< 50% (A) < 75% (B) *	< 50% (A)	—
Typical intra-model variability (14)	< 2 µg/m <sup>3</sup> (A)	< 2 µg/m <sup>3</sup> (A)	< 2 µg/m <sup>3</sup> (A)	< 2 µg/m <sup>3</sup> (A)	< 2 µg/m <sup>3</sup> (A)	—

## Table notes for gases and particulate matter:

- Measurement range:** concentration range measured by the sensor.
- Resolution:** smallest unit of measurement that can be indicated by the sensor.
- Operating temperature range:** temperature interval at which the sensor is rated to operate safely and provide measurements. (\*\*) In PM sensor Type A: -40 to 50°C with heater (more information on this version on request).
- Operating RH range:** humidity interval at which the sensor is rated to operate safely and provide measurements.
- Recommended RH range:** Recommended relative humidity range for optimal sensor performance. Continuous exposure outside the recommended range may damage the cartridge.
- Operating life:** time period during which the sensor can operate effectively and accurately under normal conditions.
- Guarantee range:** concentration range covered by Kunak's guarantee.
- LOD (Limit Of Detection):** measured at laboratory conditions at 20°C and 50% RH. The limit of detection is the minimum concentration that can be detected as significantly different at zero gas concentration, calculated according to the Technical Specification CEN/TS 17660.
- Repeatability:** measured at laboratory conditions at 20°C and 50% RH. Closeness of the agreement between the results of successive measurements of the same measure carried out under the same conditions of measurement, calculated according to the Technical Specification CEN/TS 17660.
- Response time:** time needed by the sensor to reach 90% of the final stable value.
- Typical precision - R<sup>2</sup>:** statistics obtained between the device hourly measurements and reference instruments in field test between -10 to +30°C at different locations. (\*) For the type B PM sensor, the expected error for PM<sub>10</sub> is higher in presence of coarse particles.
- Typical accuracy:** for criteria pollutants is the average Mean Absolute Error (MAE) obtained between the device hourly measurements and reference instruments for 1 to 8 months field test between -10 to +30°C in different countries. For other pollutants is the expected error of the measurement at the reading.
- DQO-Typical U (exp):** Data Quality Objective expressed as the Expanded Uncertainty in the Limit Value obtained between the device hourly measurements and reference instruments for 1 to 8 months field test between -10 to +30°C in different countries, calculated according to the European Air Quality Directive 2024/2881 and from the Technical Specification CEN/TS 17660. (\*) For the type B PM sensor, the expected error for PM<sub>10</sub> is higher in presence of coarse particles.
- Typical intra-model variability:** calculated as the standard deviation of the three sensor means in 1 to 8 months field test between -10 to +30°C in different countries.

**A, B, C, D superindex:** the super indexes refer to different types of cartridges related to the same target pollutant but with different technical specifications.



# Kunak AIR Cloud

Air quality software

## Simplify data analysis and get actionable insights for decision-making

REAL-TIME DATA | ALWAYS UPDATED

Our web-based air quality monitoring software helps environmental professionals to use and understand air quality data and delivers operational environmental intelligence to make better decisions.

Thanks to our bidirectional software, Kunak AIR Cloud offers professionals a new way to handle remote settings configuration, alarms management, calibration and field operations, as well as a complete suite for air quality data analysis.

Kunak AIR Cloud is a flexible modular software designed for user-friendly account management, easy network operation, intuitive data validation, and simple analysis and reporting.

The Kunak Cloud web platform is the powerful air quality software that completes the comprehensive Kunak AIR solution.



[www.kunakcloud.com](http://www.kunakcloud.com)

### Secure & Confidential

HTTPS/SSL protocols. Confidentiality and ownership of data guaranteed by EULA.

### Free continuous updates

Be always updated. Enjoy any new tool or functionality immediately without additional cost.

### Air Quality reports

Customized AQ reporting for clients and agencies in any required format.

### Automatic supervision

Continuous station and sensor health monitoring, with operation alarms and guided troubleshooting for anomalies.

### Reliable data guaranteed

The advanced algorithms for automatic data flagging and the data validation tool ensure high quality data.

### Pollution sources & Hot spots

Powerful air quality tools with advanced map-based visualization.

### Remote troubleshooting

Service, diagnose and repair your stations remotely. Get remote support from our team.

### Data sharing & Integration

Integrate and share data via API, export in multiple formats, and publish air quality data through web portals and widgets.

### Advanced forecasting

Advanced forecasting tools to anticipate weather, pollen and air quality trends.



# Complete suite of tools

Our air quality monitoring software is the perfect complement to unleash the full potential of Kunak AIR stations and air pollution monitoring networks.



## Control panel & dashboard

Monitor your devices in real time, check their status and latest measurements displayed on an interactive map.



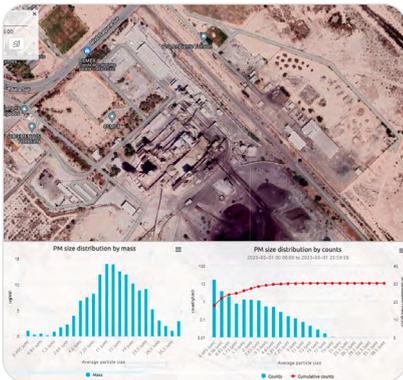
## Advanced analytics

Advanced analytics in OpenAir: basic stats, pollutant time trends, temporal variation, wind plots, and more.



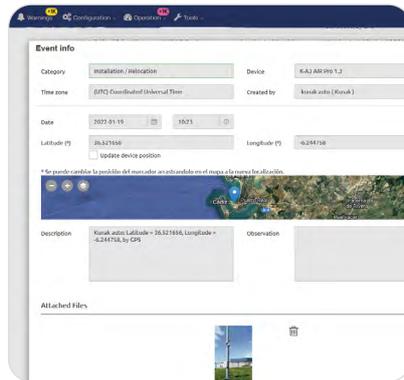
## Contamination sources

Identification of hotspots and pollution sources using heatmaps, pollution roses, and polar plots displayed directly on the map.



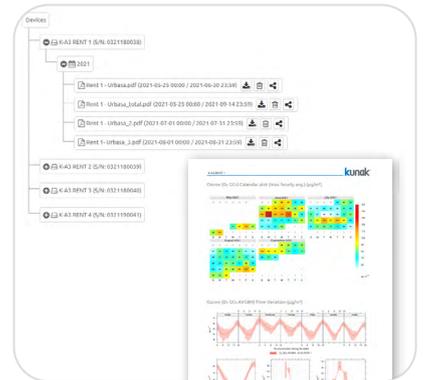
## Particle size distribution

Particle size analysis tool including size distribution graphs by mass and by counts.



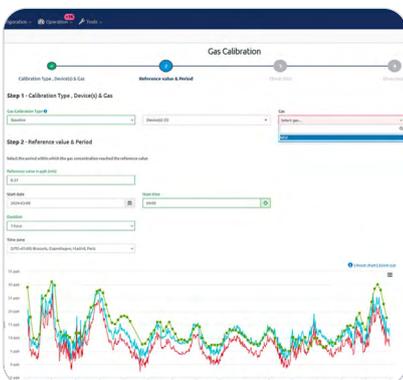
## Maintenance tracking

CMMS (Computerized maintenance management system) to record, track and consult every action performed on a device over time.



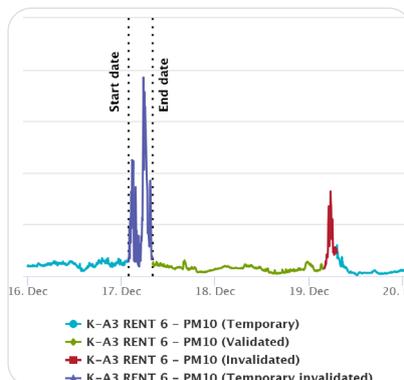
## Customized reports

Create tailored reports with air quality data in the required format clients or external agencies.



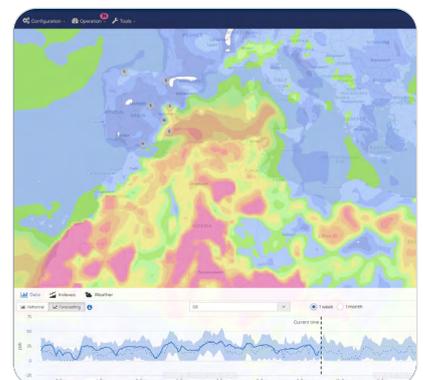
## Remote calibration

Optimize sensor performance and reduce operational costs with remote calibration and signal correction.



## Data validation

Validation tool for tagging, validating, or invalidating measurements to ensure reliable and traceable air quality data.



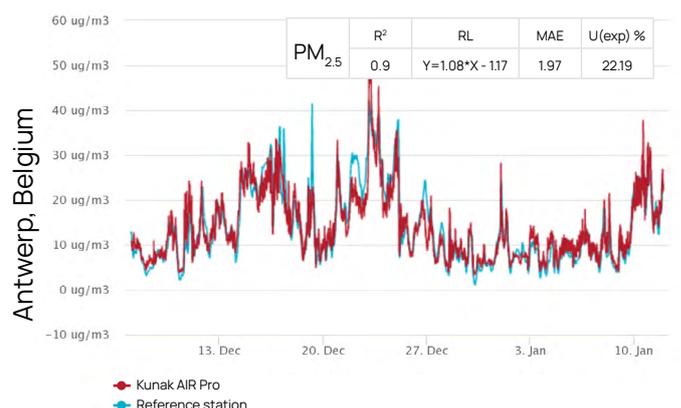
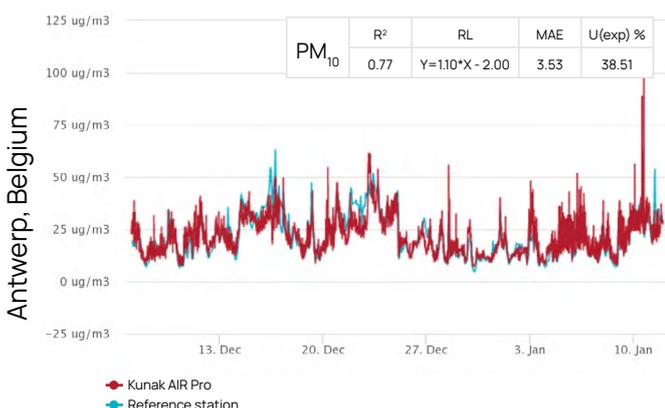
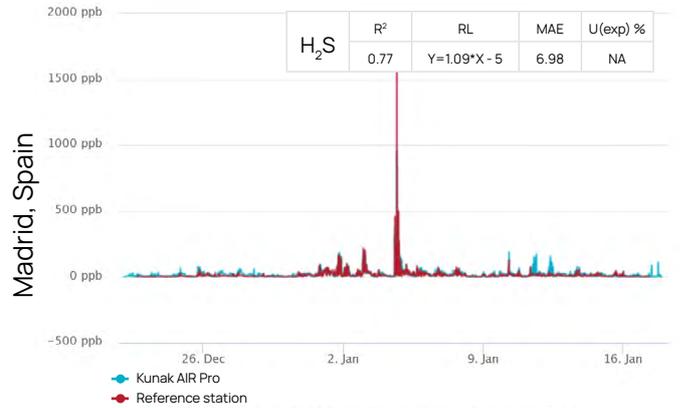
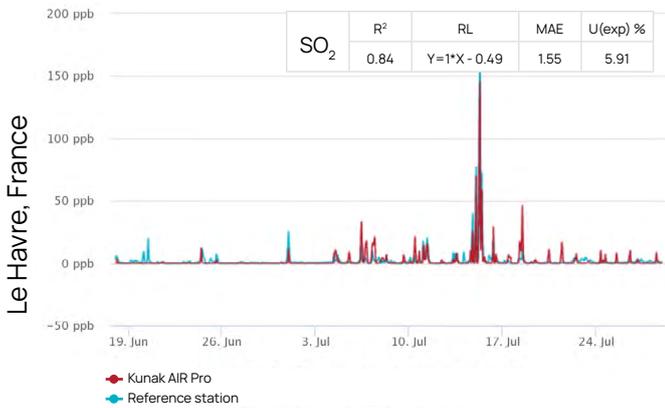
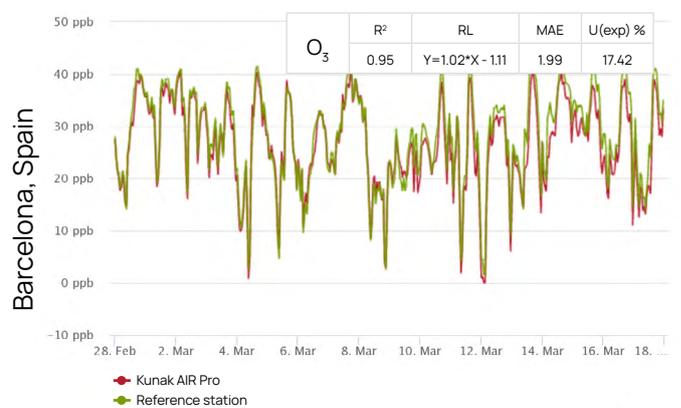
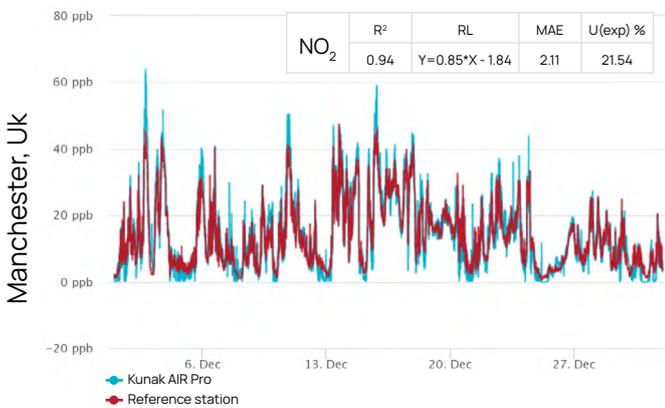
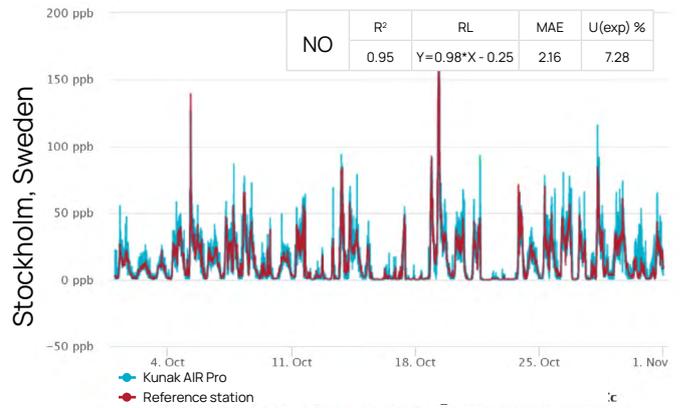
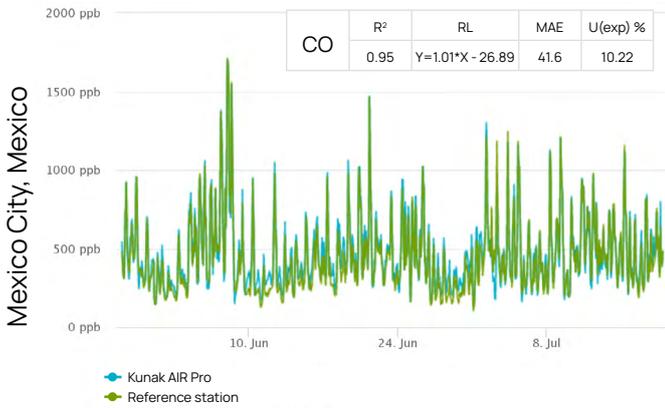
## Forecasting tools

Advanced air quality forecasting, weather and pollen (only EU) to complement local measurements.



# Evidence of accuracy

We continuously conduct intercomparative studies with reference stations in different locations and laboratories to guarantee the highest quality results.



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KP-KA-DA-1 Kunak AIR Datasheet EN v3