DATASHEET

kunak air LITE

The compact air quality monitoring station

SENSOR BASED | BEST AVAILABLE ACCURACY

PRELIMINARY VERSION

kunak®
SENSING ANYWHERE

Air quality, noise and environmental monitoring

kunak air LITE

The compact air quality station for hyperlocal monitoring

INDUSTRY GRADE DESIGN | HIGH ACCURACY

An increasing demand of a compact and cost-effective air quality solution was perceived for industrial applications and massive deployments in cities. Thus, based on the same principles as Kunak AIR Pro solution and making use of the same Smart Gas sensor technology, the Kunak AIR Lite is designed to complete Kunak AIR solutions, targeting a maximum of 2 gases and particles. In addition, probes for wind, rain, noise... can be connected to the device to meet all the necessities of your air quality project.

This industrial air quality solution is designed for harsh environments with an easy integration of real-time data into wired industrial systems and maintaining wireless data transmission to the Kunak Cloud software.

Main applications:

- Industrial fenceline monitoring
- Massive city deployments
- Leakage detection
- Wastewater management
- Landfill monitoring
- Environmental Health & Safety (EHS)
- Building Automation

Application based design

Select your targeted pollutants for industrial monitoring or massive deployments in cities.

Built-in display

Easy installation and on field diagnosis thanks to its embedded display.

Best accuracy

Get the most reliable and accurate data without the need of additional external instruments.

Cost effective

Get the most accurate technology at a fair cost.

Cartridges system

Replace and combine gas cartridges and PM sensor with a plug & play system.

Easy data integration

Local wired integration through slave MODBUS RTU or via API through the cloud.

Rugged & Compact design

The smallest air quality solution designed for harsh environments (IP65 & IK08)

Targeted pollutants

Measure up to 2 gases and particulate matter at once.

Fully autonomous

Autonomous operation with its built-in battery and solar panel.

PRELIMINARY VERSION

Specifications

Dimensions	200 x 153 x 185 mm
Weight	<2.3 kg
Enclosure	PMMA & Polycarbonate & Stainless steel
Operating temp	-20 ºC to 60ºC
Operating RH	0 to 99 %RH
IP rating	IP65
Battery	Lithium 2.9Ah or 20 Ah
External supply	7 - 12 Vdc. charger or 6 Vdc. solar panel
Autonomy	24/7 with charger or solar panel
Power consumption	0.08 - 0.55W (depending on configuration)
Communications	Multi-Band 2G/3G/4G | Ethernet | Modbus RTU Slave
GNSS	GPS and GLONASS

Gas sensors	CO, CO_2, NO, NO_2, O_3, SO_2, H_2S, NH_3 & VOCs
PM sensor	PM_1, $PM_{2.5}$ & PM_{10}*
Internal status	Temperature | Battery | Charging voltage & current | Signal
Built-in sensors	Temperature | Humidity | Atmospheric pressure | Dew point
Connectors	#1: Power 7V to 12V #2: Several options to choose from: • Option 1: Anemometer & Rain Gauge • Option 2: Modbus RTU Master • Option 3: Sound meter • Option 4: Modbus RTU Slave • Option 5: Ethernet
Sampling freq.	3Hz gases, 1Hz particles
Avg. 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 holder

Communications

GSM GPRS 2G 3G 4G Lte Ethernet Modbus RTU SLAVE

* Go to pages 24 and 25 for more information.

Technical specs

	CO	CO_2	NO	NO_2	O_3	H_2S	SO_2	NH_3	VOCs	PM_1	$PM_{2.5}$	PM_{10}
Type	Electro-chemical	Non-dispersive infrared (NDIR)	Electro-chemical	Electro-chemical	Electro-chemical	Electro-chemical	Electro-chemical	Electro-chemical	Photo-ionization detector	Optical particle counter	Optical particle counter	Optical particle counter
Unit of measurement	µg/m³, ppb[A] mg/m³, ppm[B]	mg/m³, ppm	µg/m³, ppb	µg/m³, ppb	µg/m³, ppb	µg/m³, ppb[A] mg/m³, ppm[B]	µg/m³, ppb	mg/m³, ppm	mg/m³, ppm	µg/m³	µg/m³	µg/m³
Measurement range[1]	0 - 12 ppm[A] 0 - 500 ppm[B]	0-5,000 ppm	0-5,000 ppb	0-5,000 ppb	0-2,000 ppb	0 - 2000 ppb[A] 0 - 20 ppm[B]	0-10,000 ppb	0-50 ppm	0-40 ppm	0 - 1,000 µg/m³	0 - 1,500 µg/m³[A] 0 - 1,000 µg/m³[B]	0 - 2,000 µg/m³[A] 0 - 1,000 µg/m³[B]
Resolution[2]	1 ppb[A] 0.01 ppm[B]	1 ppm	1 ppb	1 ppb	1 ppb	1 ppb[A] 0.01 ppm[B]	1 ppb	0.01 ppm	0.01 ppm	1 µg/m³	1 µg/m³	1 µg/m³
Operating temp. range[3]	-30 to 50 °C	-20 to 50 °C	-30 to 40 °C	-30 to 40 °C	-30 to 40 °C	-30 to 50 °C	-30 to 40 °C	-10 to 50 °C	-40 to 60 °C	-10 to 50 °C[A] -10 to 60 °C[B]	-10 to 50 °C[A] -10 to 60 °C[B]	-10 to 50 °C[A] -10 to 60 °C[B]
Operating RH range[4]	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	0 to 99 %RH	0 to 99% RH	0 to 99 %RH	0 to 99 %RH	0 to 99 %RH
Recommended RH range[4]	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 90 %RH	-	0 to 95 %RH[A]	0 to 95 %RH[A]	0 to 95 %RH[A]
Operating life[5]	> 24 months	> 7 years	> 24 months	> 24 months	> 24 months	100 ppm	> 24 months	> 24 months	10,000 hours	> 24 months	> 24 months	> 24 months
Guarantee range[6]	1,000 ppm	-	20 ppm	20 ppm	20 ppm	100 ppm	100 ppm	100 ppm	60 ppm	-	-	-
LOD - Limit of Detection[7]	10 ppb[A] 0.02 ppm[B]	-	2 ppb	2 ppb	3 ppb	2 ppb[A] 0.01 ppm[B]	3 ppb	0.1 ppm	0.01 ppm	0.5 µg/m³ [A]	0.5 µg/m³ [A]	1 µg/m³ [A]
Repeatability[8]	20 ppb[A] 0.05 ppm[B]		4 ppb	4 ppb	4 ppb	4 ppb[A] 0.01 ppm[B]	5 ppb		0.02 ppm	2 µg/m³ [A]	3 µg/m³ [A]	5 µg/m³ [A]
Response Time[9]	< 30 sec[A] < 180 sec[B]	< 30 sec	< 30 sec	< 60 sec	< 70 sec	< 60 sec	< 60 sec	< 45 sec	< 10 s	< 10 sec[A]	< 10 sec[A]	< 10 sec[A]
Typical Accuracy - MAE[10]	± 80 ppb[A] ± 0.1 ppm[B]	±30 ppm	±4 ppb	±5 ppb	±8 ppb	± 10 ppb[A] ± 0.05 ppm[B]	±15 ppb	±0.3 ppm	-	±2 µg/m³ [A]	±3 µg/m³ [A]	±4 µg/m³ [A]
Typical precision - R^2 [10]	> 0.85	-	> 0.9	> 0.85	> 0.9	> 0.8	> 0.7	-	-	> 0.9[A]	> 0.8[A]	> 0.7[A]
Typical Slope[10]	0.78 - 1.29	0.78 - 1.29	0.9 - 1.12	0.78 - 1.29	0.85 - 1.18	0.78 - 1.29	0.78 - 1.29	-	-	0.85 - 1.18[A]	0.85 - 1.18[A]	0.85 - 1.18[A]
Typical Intercept (a)[10]	-50 ppb ≤ a ≤ +50 ppb[A] -0.1 ppm ≤ a ≤ +0.1 ppm[B]	-	-2 ppb ≤ a ≤ +2 ppb	-4 ppb ≤ a ≤ +4 ppb	-3 ppb ≤ a ≤ +3 ppb	-2 ppb ≤ a ≤ +2 ppb[A] -0.02 ppm ≤ a ≤ +0.02 ppm[B]	-5 ppb ≤ a ≤ +5 ppb	-	-	-1.8 µg/m³ ≤ a ≤ +1.8 µg/m³[A]	-2 µg/m³ ≤ a ≤ +2 µg/m³[A]	-3 µg/m³ ≤ a ≤ +3 µg/m³[A]
DQO - Typical U(exp)[11]	< 20%	-	< 20%	< 25%	< 20%	NA	< 25%	NA	NA	< 50%[A]	< 50%[A]	< 50%[A]
Typical Intra-model variability[12]	< 3 ppb[A] < 0.05 ppm[B]	-	< 1 ppb	< 1 ppb	< 1 ppb	< 2 ppb[A] < 0.02 ppm[B]	< 3 ppb	< 0.1 ppm	< 0.1 ppm	< 2 µg/m³ [A]	< 2 µg/m³ [A]	< 2 µg/m³ [A]

1. Measurement range: concentration range measured by the sensor.
2. Resolution: smallest unit of measurement that can be indicated by the sensor.
3. Operating temperature range: temperature interval at which the sensor is rated to operate safely and provide measurements.
4. Operating RH range (Recommended RH range): humidity interval at which the sensor is rated to operate safely and provide measurements. Recommended RH range of the sensor for continuous exposure.
5. Operating life: lifetime of the sensor at normal conditions.
6. Guarantee range: limit covered by the guarantee.
7. LOD (Limit Of Detection): measured at laboratory conditions at 20ºC and 50% RH. It is the minimum concentration that can be detected as significantly different at zero gas concentration, based on the metric from the Technical Specification CEN/TS 17660-1:2022.
8. Repeatability (measured at laboratory conditions at 20ºC 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, based on the metric from the Technical Specification CEN/TS 17660-1:2022.
9. Response time: time needed by the sensor to reach 90% of the final stable value.
10. Statistical metric: statistics obtained between hourly measurements of the device and the reference instruments for 1 to 8 months field test between -10 to +30 ºC in different countries.
11. DQO - Typical U(exp): Data Quality Objetive expressed as the Expanded Uncertainity in the Limit Value obtained between hourly measurements of the device and the reference instruments for 1 to 8 months field test between -10 to +30ºC in different countries, based on the metric from the European Air Quality Directive 2008/50/EC and from the Technical Specification CEN/TS 17660-1:2022.
12. Typical intra-model variability: calculated as the standard deviation of the three sensor means in 1 to 8 months field test between -10 to +30ºC in different countries.


kunak
AMMONIA
NH3
HYDROGEN SULFIDE
H2S
air
kunak

Large data is the goal
but accurate data is the key

kunak®
SENSING ANYWHERE

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