ellona

TECHNICAL DATA SHEET

INDOOR ENVIRONMENTAL MONITORING.

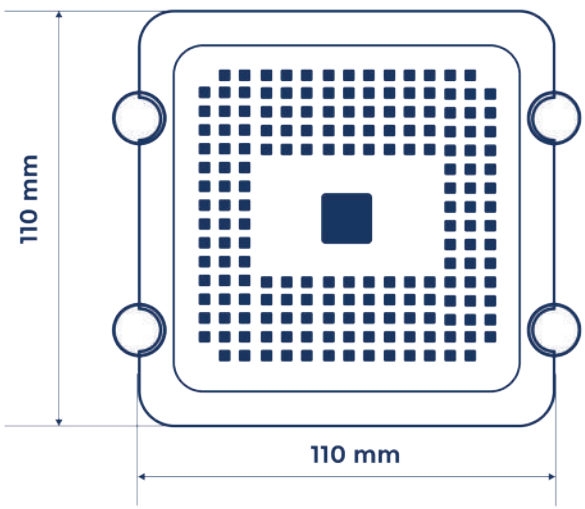
GENERAL FEATURES

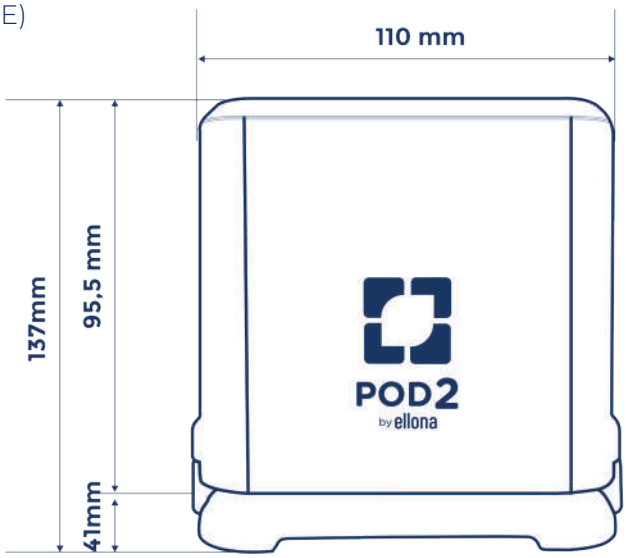
A versatile multisensory device dedicated to indoor environments, designed for comprehensive and continuous environmental data collection, encompassing physical, chemical, and perceptual metrics.

1. **Multisensors device**: it collects data on physical, chemical, and perception factors.
2. **Alarm mode:** it monitors all measurement channels with adjustable triggering thresholds.
3. **Visual alerts:** it provides information through LED color changes for quick visual feedback.
4. **Data security:** it safeguards your information with online data collection and 48-hour storage (in case of communication loss).
5. **Software updates:** it ensures your device is always up-to-date with software hosted on secured servers and online update functionality.
6. **Versatile connectivity:** it communicates seamlessly through various channels, including WIFI, LoRa (Long Range), LTE-M (3G-4G), and Ethernet.
7. **High data frequency:** it captures data at a frequency of one data set every 10 seconds for detailed monitoring.
8. **Odour data banks:** it detects and categorizes odours such as musty, solvents, cigarette smoke, sewer, and more.
9. **Real-time subjective reporting:** it allows users to report their real-time subjective perceptions of the environment through **QR Codes** attached to each module.

- **Operating temperature:** -20°C/ +40°C
- **Operating humidity:** <100% non condensing R.H
- **Storage temperature:** -5°C / +40°C

Power supply = 5V DC / Power Over Ethernet (POE)
Weight = 360 gr





SENSORS COMBINATION

NATIVE FUNCTIONALITIES

- **Temperature**
- **Humidity**
- **Atmospheric pressure**
- **Light** (Intensity & Color)
- **TVOC** (equivalent concentration)
- **Vibration**
- **Noise**

OPTIONS

Gas sensors
Select up to 4 electrochemical gas sensors and 1 optical gas sensor

Particulate Matter Sensors
Several options are available

Odour function
Quality
1 board with 4 MOX sensors

NATIVE SENSORS

	Sensor Type	Measuring Range	Accuracy*	Resolution*	Lifespan**
1	**Temperature**	-40 to +85° C	±1° C	0.1° C	3-5 years
2	**Atmospheric pressure**	300 to 1,100 hPa	±0.6 hPa	0.1 hPa	3-5 years
3	**Humidity**	0 to 100 % RH	±3 % RH	0.1 % RH	3-5 years
4	**Total VOC** equivalent concentration	0 to 1,000 ppm	1 ppm	0.1 ppm	3-5 years
5	**Light** intensity	0 to 10,000 Lux	5 Lux	1 Lux	3-5 years
6	**Light** color (t°)	0 to 12,000 K	50 K	1 K	3-5 years
7	**Noise** equivalent level	30 to 120 dBA	1 dBA	0.1 dBA	3-5 years
8	**Vibration** level	0 to 40 m/s^2	0.01 m/s^2	0.005 m/s^2	3-5 years

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C*
*** 12-month warranty included*

OPTIONAL SENSORS (1/2)

GASES

LIFESPAN: 3-5 years
(contingent on the surrounding conditions)

Select up to:
4 Electrochemical sensors
1 Optical sensor

● = The most frequently utilized gases

		Sensor Type	Measuring Range	LOD*	Resolution*	Interferences
●	1	**Alcohols**	0 to 200 ppm	0.009 ppm	0.001 ppm	+1% CO, hydrocarbons
●	2	**CH_2O** Formaldehyde	0 to 10 ppm	0.002 ppm	0.001 ppm	+3% H_2; +15% CO; +50% Ethanol, organic solvents
	3	**Cl_2**	0 to 20 ppm	0.018 ppm	0.006 ppm	100% NO_2; -80% H_2S
●	4	**CO**	0 to 1,000 ppm	0.063 ppm	0.001 ppm	+10% H_2; -2% NO_2
	5	**CO_2** NDIR**	0 to 5,000 ppm	± 30 ppm	1 ppm	
●	6	**EtO** Ethylene Oxyde	0 to 10 ppm	0.005 ppm	0.001 ppm	+30% H_2; +50% CO; +60% EtOH
	7	**H_2**	0 to 2,000 ppm	6 ppm	2 ppm	NO<40%; C_2H_4<25%
	8	**H_2**	0 to 4,000 ppm	6 ppm	2 ppm	+70% CO
	9	**H_2**	0 to 40,000 ppm	15 ppm	5 ppm	+60% CO
	10	**HCL**	0 to 20 ppm	0.2 ppm	0.06 ppm	50% HBr, <200% H_2S; -30% NO_2; <25% Cl_2
	11	**HCN**	0 to 100 ppm	0.129 ppm	0.043 ppm	+300% H_2; -180% NO_2; -12% Cl_2; +10% SO_2
	12	**H_2O_2** Peroxyde	0 to 100 ppm	0.1 ppm	0.001 ppm	+ 100% SO_2
●	13	**H_2S**	0 to 50 ppm	0.003 ppm	0.001 ppm	-30% NO_2; -25% Cl_2; +10% SO_2
●	14	**NH_3**	0 to 100 ppm	0.09 ppm	0.001 ppm	-20% SO_2
●	15	**NO**	0 to 250 ppm	0.011 ppm	0.001 ppm	+10% H_2S; +2% NO_2; + 3% SO_2
●	16	**NO_2**	0 to 5 ppm	0.003 ppm	0.001 ppm	+10% H_2S; +2% NO_2; + 3% SO_2
●	17	**NO_2 + O_3**	0 to 10 ppm	0.003 ppm	0.001 ppm	+100% Cl_2
	18	**O_2**	0 to 30%	0.1%	0.1%	
	19	**PH_3**	0 à 10 ppm	-	<0,1 ppm	<15% H_2S; <30% NO_2; <60% SO_2
	20	**RSH** Tertiobutyl Mercaptan	0 to 14 ppm	0.1 ppm	0.03 ppm	
●	21	**SO_2**	0 to 50 ppm	0.008 ppm	0.001 ppm	-130% NO_2; -60% Cl_2; + 40% C_2H_4

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C* ***Non dispersive infrared sensor*

OPTIONAL SENSORS (2/2)

PARTICLES

LIFESPAN: 3-5 years

	Sensor	Measuring Range	Resolution*	LOD (Limit of detection)	Typical Accuracy
1	**Particles Mass Concentration**				
	PM_1	0 to 1,000 µg/m³	1 µg/m³	0.5 µg/m³	±2 µg/m³
	$PM_{2.5}$	0 to 2,000 µg/m³	1 µg/m³	0.5 µg/m³	±3 µg/m³
	PM_4	0 to 2,000 µg/m³	1 µg/m³	0.5 µg/m³	±3 µg/m³
	PM_{10}	0 to 10,000 µg/m³	1 µg/m³	0.5 µg/m³	±4 µg/m³
2	**PM count**	PM0.5, PM1, PM2.5, PM4, PM10 particles/cm³	1 particle	-	Linearity error <5%, Repeatability error <3%

** Precision Measurements in Controlled Laboratory Conditions: 50% RH, 20°C*

ODOURS

MOX SENSOR LIFESPAN: 3-5 years

1 board with **4 MOX Sensors**

	Principle	ELLONA virtual sensor	Training
Odour Detection	Relative odour event in Indoor environment (baseline monitoring)	"ELLONA distance" Anomaly detection OIIL: Odour Intensity Index Level in real time	Sampling? No Inputs? Ambiant exposition to event or QR code surveys
Odour Intensity	Odour Quantification Event detection	"IOU: Instrumental Odour Unit in real time"	Sampling? No Inputs? Ambiant exposition to event or QR code surveys
Source Identification	Event Fingerprinting	"Identification" Classifier & Trigger value	Sampling? No Inputs? Ambiant exposition to event or QR code surveys

CONFIGURATIONS
Examples

HEALTH - HOSPITALS

Temperature / Humidity / Odours / Pressure
Noise / CO_2 / PM / EtO / CH_2O / NH_3 / H_2S

OFFICE - OPEN SPACES

Temperature / Humidity / Odours / Pressure
Noise / CO_2 / PM

SHOPPING CENTERS

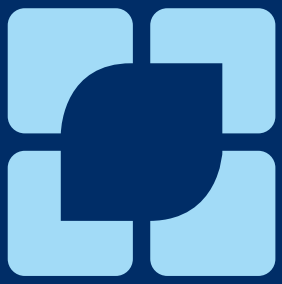
Temperature / Humidity / Odours / Pressure
Noise / CO_2 / PM / NO_2

INDUSTRIAL WORKSHOP

Temperature / Humidity / Odours / Pressure
Noise / CO_2 / PM / NO_2 / CO / NO / H_2S

AIRPORTS - HALLS

Temperature / Humidity / Odours / Pressure
Noise / CO_2 / PM / NO_2 / O_3 / H_2S / NH_3



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