

Microsensors for PM1, PM2.5 & PM10 monitoring

AIR QUALITY MONITORING SYSTEMS

“40 years of experience in the field of environmental monitoring to the benefit of our micro-sensors”

The last generation of Cairsens® micro-sensors for Particulate Matters (PM) monitoring operates without any influence from moisture in ambient air.

They measure PM1, PM2.5 and PM10 concentrations, with increased precision for PM2.5

The Cairsens® allows a year of continuous maintenance-free operation, even in highly polluted and humid atmospheres.

Thanks to its robust and miniature design, it is fully compatible with ENVEA's turnkey AQMS station Cairnet®.

It can also be easily embedded into a specific integration process.



MAIN BENEFITS:

- PM10, PM2.5 & PM1 real-time monitoring in the range 0 to 1 000 µg/m³
- Heated air flow over 60% of relative humidity
- **High-performance solution for OEM integration or stand-alone measurement**
- **Calibration guaranteed for 1 year**
- No maintenance (1 year lifetime)
- Ultra-small, with low power consumption
- Cost-effective solution for high performances
- Ready to use and easy to integrate
- Compliant with **European directive 2008/50 EC** for indicative measurements

MAIN APPLICATIONS:

- Indoor and outdoor air quality monitoring: Smart cities, Road-side & tunnels, parkings, airports, ship terminals...
- Command and control with real time PM management levels: Industries, mines, manufacturing plants, green waste treatment plants and refineries
- Filter efficiency monitoring
- Providing data for air dispersion modeling
- Help guaranteeing health and safety: mines, industrial sites, construction sites



METROLOGICAL PERFORMANCES⁽¹⁾

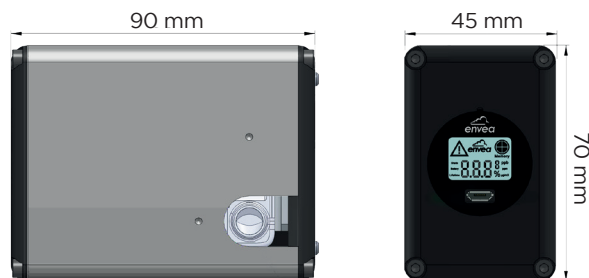
Mesured parameters	PM1, PM2.5 & PM10
Measuring Range ⁽³⁾	0 - 1 000 µg/m ³
Particle size detection range ø	0.3 - 10 µm
Certified* Detection Limit ⁽²⁾	< 5 µg/m ³
Display resolution	0.01 µg/m ³
Linearity ⁽²⁾	R ² > 0.75
Uncertainty between sensors	< 5 µg/m ³
Accuracy (slope) ⁽²⁾	0.7 to 1.3
Sample conditioning	Controlled airflow, heated air flow over 60% relative humidity
Temperature effect	< 0.01 µg/m ³ /°C
Technology	Laser Light Scattering
Operating Temperature	-20 to 70 °C
Operating Relative Humidity	0 to 95 HR % (no-condensing)
Operating Atmospheric Pressure	500 to 1 500 mbar

STORAGE CONDITIONS

Temperature (°C)	-20 to 70
Relative Humidity (% HR)	0 to 95 (no-condensing)
Pressure (mbar)	500 to 1500

COMPLIANCE TO ENVIRONMENTAL REGULATIONS

Electrical safety	NF EN 61010-1: 2010
Electromagnetic Compatibility	NF EN 61326-1: 2013
Protection Index	IP 42 (according to IEC 60529)

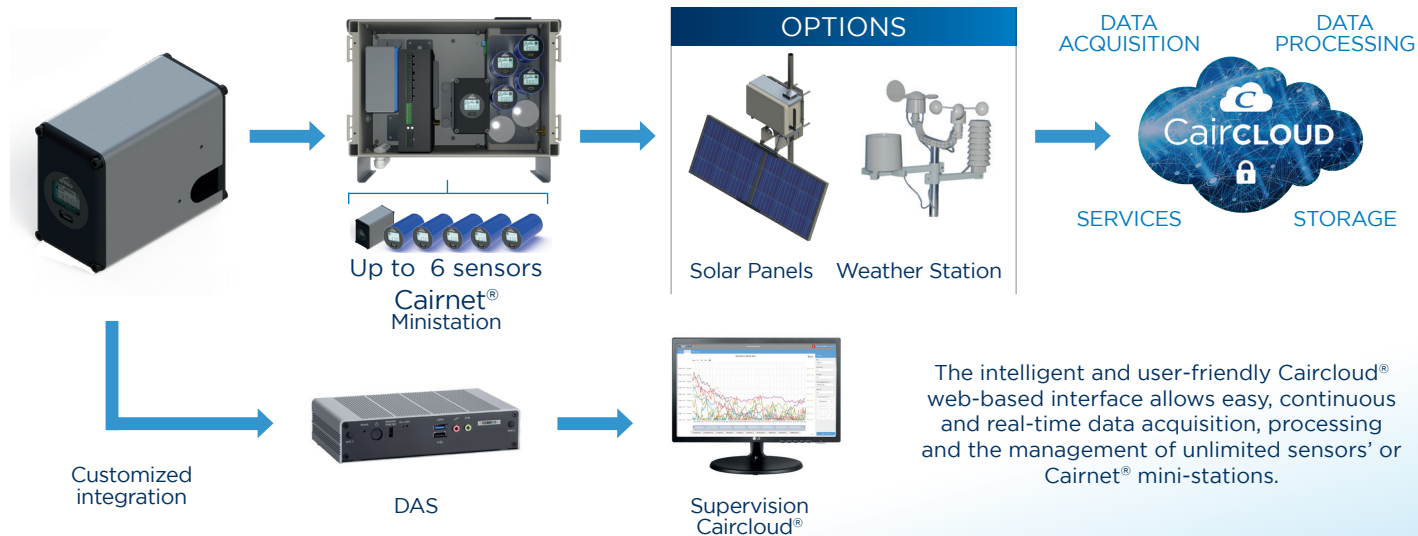


(1) Laboratory operating conditions: 20°C ± 2°C / 50% RH ± 10% / 1013 mbar ± 5%
 (2) According to our laboratory evaluation: daily averages measurements for PM2.5 in comparison with an reference
 (3) Arizona sand equivalent

PM Cairsens®

Micro-sensors

* PM Cairsens® are manufactured and calibrated in France. Each sensor is delivered with a **calibration certificate**.



The intelligent and user-friendly Caircloud® web-based interface allows easy, continuous and real-time data acquisition, processing and the management of unlimited sensors' or Cairnet® mini-stations.

SYSTEM SPECIFICATIONS

Lifetime	1 year of continuous operation (10 000 h)
Nominal Power supply	5V DC / 500 mA, USB port of a PC or Power bank (not provided).
Power Consumption	250 mA max under 5V DC
Gas sampling method	Controlled airflow with fan, flow rate 2.5 L/min
I/O loggin & communications	UART, Modbus using micro-USB port.
LCD Display	Concentration in µg/m ³ , sensor lifetime remaining, operating status, memory available ...
Control & data treatment board	Internal microprocessor for data acquisition and treatment, embedded timer.
Data Storage (internal)	2 days for 1 min data, 30 days for 15 min data or 120 days for 60 min data
Download data mode	- Customized integration / DAHS - Cairnet mini station (data export on Caircloud®) (option)
Weight	370 g



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