

# 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.

The Cairsens® allow for continuous maintenance-free operation during their lifetime, even in highly polluted and humid atmospheres.

Thanks to their robust and miniature design, they are fully compatible with ENVEA's turnkey AQMS station Cairnet®. They 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/m<sup>3</sup>
- **Calibration guaranteed for 1 year**
- No maintenance required during their lifetime
- Measurement not influenced by air humidity: air flow heated over 60% of HR
- 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, building & construction



## METROLOGICAL PERFORMANCES<sup>(1)</sup>

Mesured parameters	PM1, PM2.5 & PM10
Measuring Range <sup>(3)</sup>	0 - 1 000 µg/m <sup>3</sup>
Particle size detection range ø	0.3 - 10 µm
Certified* Detection Limit <sup>(2)</sup>	< 5 µg/m <sup>3</sup>
Display resolution	0.01 µg/m <sup>3</sup>
Linearity <sup>(2)</sup>	R <sup>2</sup> > 0.75
Uncertainty between sensors	< 5 µg/m <sup>3</sup>
Accuracy (slope) <sup>(2)</sup>	0.7 to 1.3
Sample conditioning	Controlled airflow, heated air flow over 60% relative humidity
Temperature effect	< 0.01 µg/m <sup>3</sup> /°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

Metrological performances according to the European Directive 2008/50/EC are guaranteed for 12 months

(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

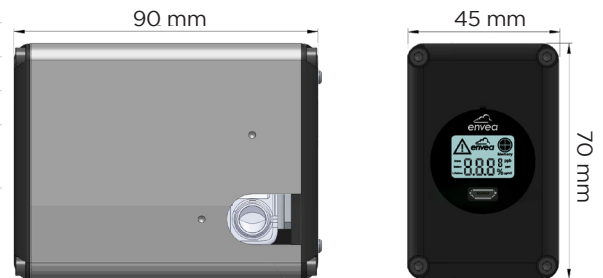
(3) Arizona sand equivalent

## STORAGE CONDITIONS

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

## COMPLIANCE TO ENVIRONMENTAL REGULATIONS

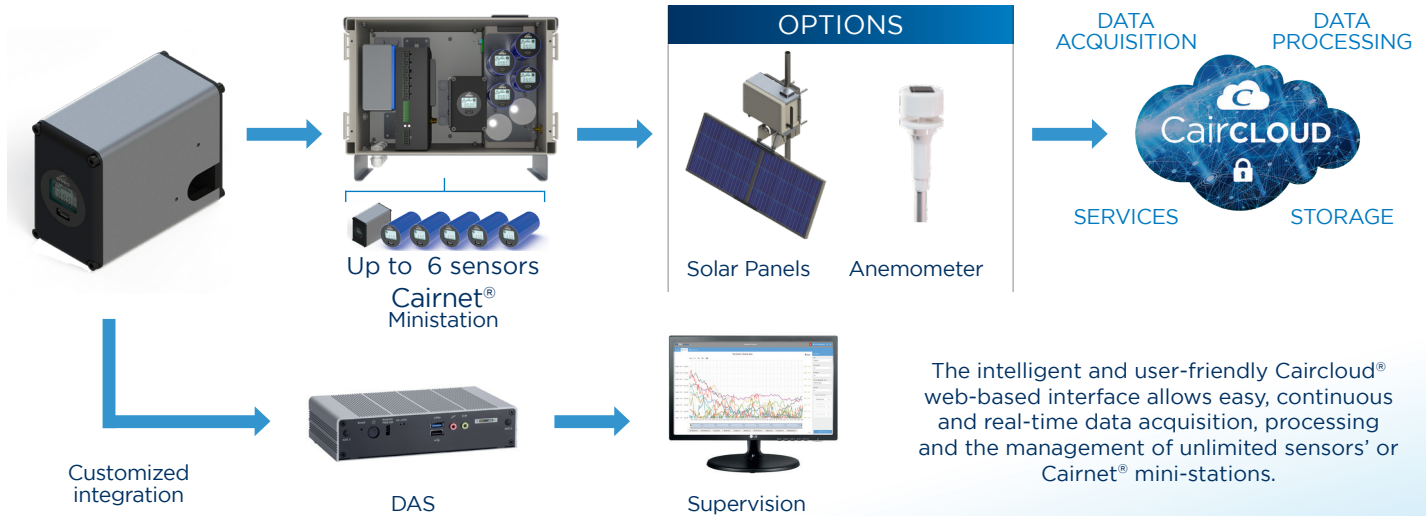
Electrical safety	NF EN 61010-1: 2010
Electromagnetic Compatibility	NF EN 61326-1: 2013
Protection Index	IP 42 (according to IEC 60529)



## 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.

## TECHNICAL SPECIFICATIONS

Sampling method	Dynamic air sampling, with a controlled micro-fan
Power supply	5V DC / 500 mA, USB port of a PC or Power bank type «Always on» (not provided).
Power Consumption	250 mA max under 5V DC
I/O communications	USB, UART, Modbus RTU-TTL. Modbus RS445 on request (article code A40-0219)
Lifetime duration	24 months
LCD Display	Concentration in µg/m <sup>3</sup> , operating status, memory available ...
Control & data treatment	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	- Cairsoft (free download on our website) - e-SAM DAHS system or Customized integration - Cairnet® Mini-stations with data exported in the Caircloud®
Weight	370 g



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More information & downloads:  
[envea.global/cairnet/faq-downloads](http://envea.global/cairnet/faq-downloads)

