

# Continuous, Automatic Suspended Particulate Monitor

AIR QUALITY MONITORING SYSTEMS

The **MP101M** uses the ISO 10473 Standard for dust monitoring in ambient air: Measurement of the mass of particulate matter on a filter medium - Beta-ray absorption method.



## SPECIFIC FEATURES:

- High accuracy, not influenced by the physicochemical nature of particles
- True volumetric air flow control with three atmospheric pressure and temperature sensors
- Sampling flow-rate continuously regulated to the atmospheric temperature and pressure: reduces evaporation artefacts of volatile compounds (compliant with EU recommendations for PM2.5 measurement). No influence of the seasons changes on the calibration coefficient.
- Built-in reference gauge for calibration: no need for factory re-calibration
- Fibreglass tape with 3 years of autonomy of continuous daily sampling
- Rugged instrument, not sensitive to vibration, humidity, temperature...
- Data recording through RS232, Ethernet, USB port
- Extremely compact: easy to install as bench top or rack mounting in mobile or stationary laboratories
- 7" TFT color touch screen display
- Ultra-low activity C<sup>14</sup> sealed flat source
- Interchangeable sampling heads PM10, PM2.5, PM1 and TSP
- New: On board web server compatible with any internet browser; ENVEA Connect™ user interface & free app for display, configuration, maintenance, diagnostics or software updating, remotely, from any PC, tablet or smartphone.



Complete measurement system with RST sampling tube and sampling head



Sliding drawer on the rear panel for easy access & maintenance

## CERTIFICATIONS / STANDARDS:

STANDARD COMPLIANCE ISO 10473: 2000

- FOR PM10:
  - ▶ US-EPA (EQPM-0404-151)
  - ▶ EN 16450:2017
  - ▶ EN 12341:2014
- FOR PM2.5:
  - ▶ US-EPA (EQPM-1013-211)
  - ▶ J-MOE PM 2.5 TYPE APPROVED
  - ▶ EN 16450:2017
  - ▶ EN 12341:2014

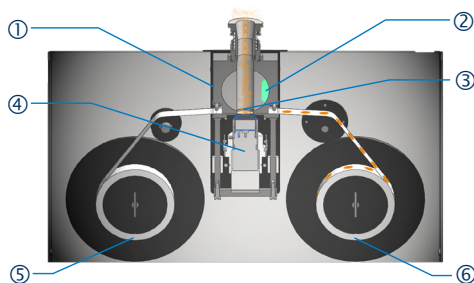
# Suspended Particulate Monitor **MP101M**

## PRINCIPLE OF OPERATION:

The **MP101M** is a continuous monitor that measures suspended particulate matter (SPM) in ambient air. It allows regulatory oversight of PM10 and PM2.5, with an alarm in case of threshold exceeding. The analyzer is based on the beta ray attenuation measurement technique; it determines the fine dust concentration by measuring the amount of radiation that a sample, collected on a fiber tape, absorbs when exposed to a radioactive source. Low energy beta rays are absorbed by collision with electrons, whose number is proportional to density. Absorption is thus a function of the mass of the irradiated material, independently of its physicochemical nature.

Combined with the optional CPM (Continuous Particulate Measurement) module, the monitor allows a precise and real-time evaluation of PM10, PM2.5 and PM1 simultaneously. The CPM module can be plugged additionally to all existing MP101M, between the RST sampling line and the MP101M monitor.

### MP101M - operating principle



- ① Rotating source holder
- ② Beta Source C<sup>14</sup>
- ③ Dust deposit
- ④ Geiger-Muller counter
- ⑤ Discharging fiber roll
- ⑥ Receiving fiber roll

## OPTIONS & ACCESSORIES:

- **CPM module** for optical real-time indication (concentration, counting, classification by size range) of particles (see specific brochure)
- US EPA and EU-CEN compliant sampling inlets
- **Temperature-regulated sampling tube (RST):** 1 m, 1.5 m, 2 m, 2.75 m, compliant with **CEN PM10 Directive**
- Max 2 ESTEL electronic boards with:
  - 4 independent analog inputs / outputs
  - 4 remote control inputs
  - 6 dry contacts outputs
- External pump assembly: diaphragm (9.4kg), rotary vane (4.6kg)
- All-weather cabinet for outdoor use, with or without air conditioning
- Easy to install span calibration module for automatic and programmable calibrations
- Field connection kit for leak and zero test (on RST tube)
- Laboratory connection kit for leak and zero test (on MP101)
- Bead flowmeter for calibrating the sampling flow rate
- HEPA filter for zero test

## TECHNICAL SPECIFICATIONS

Measuring ranges	0-10 000 µg/m <sup>3</sup> (user-selectable & programmable)
Lower detectable limit	0.5 µg/m <sup>3</sup> (24h average)
Measurement cycles	30 min, 1h, 6h, 12h, 24h... user-selectable (up to 96 hours)
Measuring period	10 min, 15 min, 30 min, 1h, 2h... user-selectable (up to 48 hours)
Beta Source	Sealed Carbon 14 (1.6MBq ±15%)
Detector	High performance Geiger-Müller counter
Sampling flow rate	1 m <sup>3</sup> /h
Standard filter	Fibreglass tape (width 35 mm, length 30 m) Autonomy for 1,200 samples (>3 years of daily measurements)
Power supply	230V/50Hz (115V/60 Hz)
Housing	19" rack / 6U
Dimensions	483 x 324 x 266 mm (W x D x H)
Weight	15.2 kg (without pump)
Operating temperature	0°C to +40°C
Serial link	RS232
Ethernet (RJ45) and USB ports	
On-board webserver with remote ENVEA Connect™ interface included	
Pressure and temperature compensation	

### SAMPLING INLETS



PM 10 - EN 12341  
PM 2.5 - EN 14907



PM10  
lowered  
US-EPA

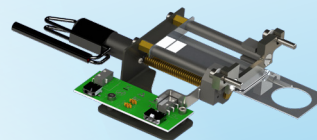


PM 2.5 VSCC  
adapter  
US-EPA



TSP  
US-EPA

Other sampling inlets for research or specific applications are available upon request, such as PM1 for Europe and US-EPA



Automatic and programmable  
Span Calibration Module



TCP/IP remote  
ENVEA Connect™ app and  
user interface with animated  
diagram and intuitive  
navigation

