

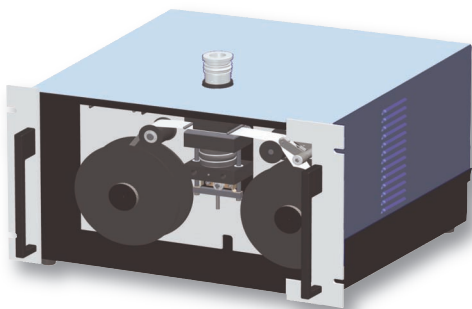
## Ambient Air Suspended Particulate Analyzer Model MP101M

Air quality  
monitoring

**New**

Main module  
MP101M-LCD (Beta gauge):

- certified equivalent to PM10 measurement Reference Method according to US EPA (n°EQPM-0404-151) and EN 12341 (CNR087/2004)
- standard method according to ISO 10473 : 2000



Additional module CPM  
(photometry) allowing true  
continuous measurement &  
particulate size distribution  
(PM10/PM2.5/PM1):



### Major fields of application:

- Ambient air quality monitoring
- Indoor dust monitoring
- Working places
- Industrial areas
- ...

### Benefits of MP101M with CPM option:

- True particulate concentration measurement, not influenced by the physico-chemical nature, color or shape of particulates
- True volumetric air flow control with atmospheric temperature and pressure sensors to avoid artefacts in the size fractionating inlet
- Real time optical counting of PM10, PM2.5 & PM1 (nb/cm<sup>3</sup>) and measurement of the concentration (µg/m<sup>3</sup>)
- Direct integration of CPM on MP101M between the inlet of the analyzer and the RST sampling tube (temperature-regulated to avoid evaporative losses of semi-volatile particulate matter)
- Calibration of the real time concentration measurement against the reference measurement (β gauge) : CPM recalibration unnecessary
- Exclusive patented optical technology, guaranteeing strictly no interference due to particulate nature
- Direct measurement of particulate concentration by granulometric size family PM10, PM2.5, PM1

## Ambient Air Suspended Particulate Analyzer Model MP101M

### MP101M module specifications:

- Measurement ranges: 0-100 / 0-200 / 0-500 / 0-1,000 / 0-2,000 / 0-5,000 / 0-10,000 µg/m<sup>3</sup>
- Lower detectable limit (according to cycle and flowrate): 0.5 µg/m<sup>3</sup> with PM10 inlet (24h average)
- Cycle time: 1/2, 1, 2, 3, 6, 12, 24 h, user-selectable
- Sample collection period: 1/4, 1/2, 1, 2, 3 h, user-selectable
- Counting time: 10 to 300 sec, user-selectable
- Source: sealed Carbon 14 (activity < 3.33 MBq)
- Detector : high performance Geiger-Müller counter tube
- Sampling flow rate: 1.0 to 1.5 m<sup>3</sup>/h, user-selectable
- Standard filter: fiberglass tape (width 35 mm, length 30 m)
- Autonomy: up to 1,200 measurements (more than 3 years on a daily sampling rate)
- Power supply: 230V/50Hz (115V/60 Hz)
- Consumption: 330 VA (pump included)
- Housing: 19" rack / 6U
- Dimensions: 440 x 483 x 266 mm (L x W x H)
- Weight: monitor 21.5 kg / pump 10.9 kg
- Operating temperature: +10 to +40 °C
- Analog outputs: 2 x 0-1 V, 0-10 V, 0-20 mA or 4-20 mA
- Serial link: 1 RS 232/RS422
- Ethernet and USB ports

### Operating principle:

MP101M determines the particulate concentration by measuring the amount of radiation a sample 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 physico-chemical nature.

CPM performs a real time optical counting and a measurement of particulate concentration.

A light source generates a laser beam, which horizontally crosses the sampling tube. When a particulate crosses the beam, light is scattered and the photodiode receives a pulse, which intensity depends on the size of the particulate.

An analog to digital converter records the intensity of pulses when the particulate crosses the beam. According to the level of the signal, the system is able to distinguish a large particulate (PM10 = strong signal), a middle-size particulate (PM2.5) or a small particulate (PM1).

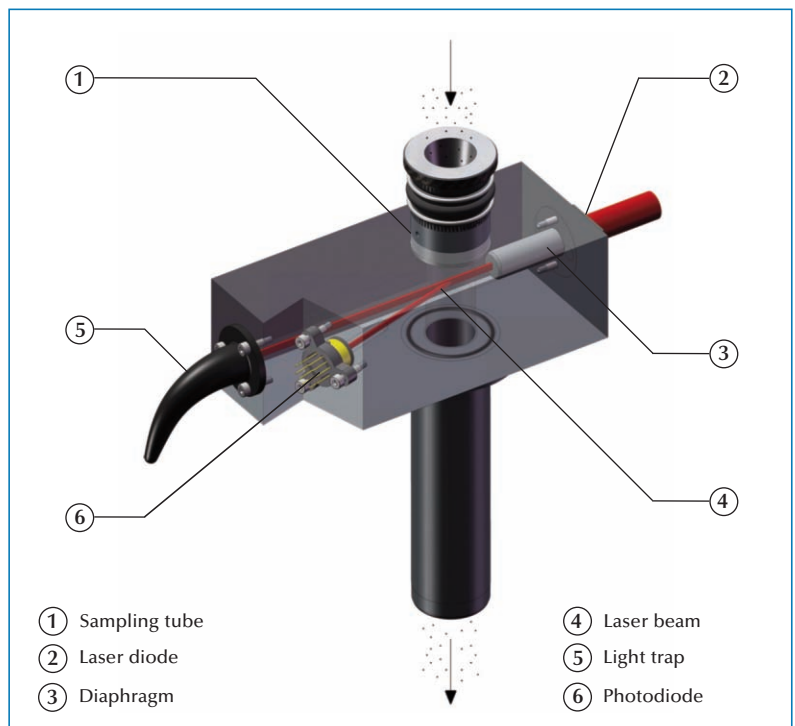
The number of particulate that are detected is converted into concentration using a powerful algorithm, developed in co-operation with french CNRS (National Center for Scientific Research), thus ensuring a perfect reliability.

### CPM module specifications:

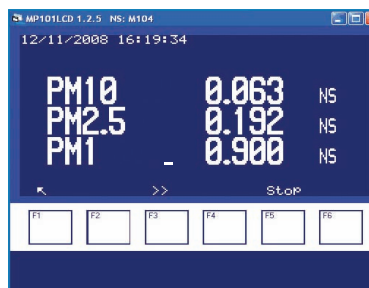
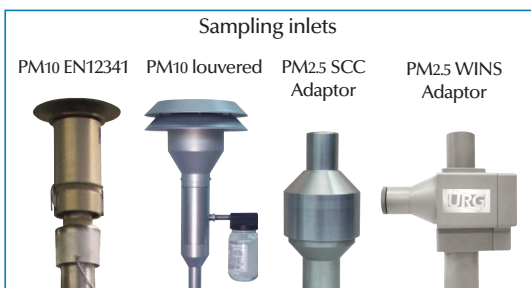
- Technology: light scattering
- Measurement range: 0-1500 µg/m<sup>3</sup>
- Max. number of particulate counted: 100,000,000 per liter
- Optical source: red visible laser diode, λ = 635 nm, energy 12 mW
- Detector: photodiode with built-in amplifier
- Accuracy: ± 5% (against reference method over 24h)
- Temporal resolution: 1 second
- Dimensions: 280 x 66 x 130 mm (W x D x H)

### Options & Accessories:

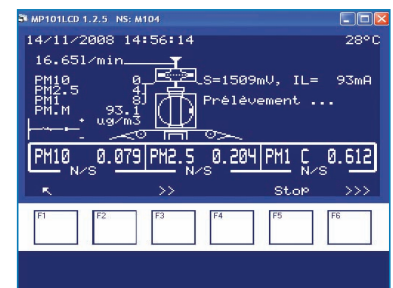
- US EPA and EU-CEN compliant sampling inlets: TSP, PM10, PM2.5 (SCC, WINS, ...), PM1
- True volumetric air flow control according to atmospheric T° and P at the sampling inlet (as per EN 14907:2005 standard for PM2.5)
- Temperature-regulated sampling tube (1 m, 2 m, 2.75 m), compliant with CEN PM2.5 standard
- External pump assembly (membrane or alternatively pales)
- All-weather cabinet for outdoor use
- 4 additional 4-20mA outputs



- ① Sampling tube
- ② Laser diode
- ③ Diaphragm
- ④ Laser beam
- ⑤ Light trap
- ⑥ Photodiode



«Instantaneous measurement» screen



«Operating block diagram » screen

