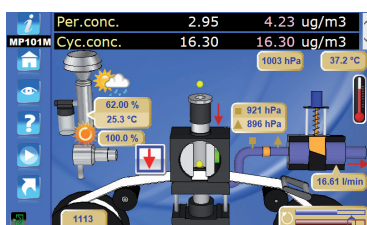




Automatic & Real-Time Suspended Particulate Monitor MP101M with CPM option



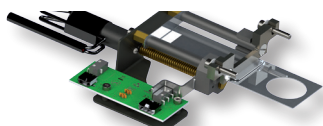
TCP/IP remote ESA Connect™ interface with animated diagram and intuitive navigation by pictograms



Optical CPM module for evaluation in real time of several particulate size fraction



Sliding drawer on the rear panel for easy access and maintenance



Automatic and programmable Span Calibration Module

DESCRIPTION:

The standard Beta gauge measurement Method **ISO 10473** of the MP101M analyzer allows, when used with the patented optical technology of the CPM module, the continuous and simultaneous measurement of fine dust. The beta attenuation instrument is compliant with **EN 12341 for PM10** and **EN 14907 for PM2.5** European Standards and is approved as Federal Equivalent Method (FEM) by **US EPA for PM10 and PM2.5** continuous suspended particulate monitoring.

This unique combination provides **exclusive benefits**:

- **Precise beta attenuation monitoring of PM10, PM2.5, PM1 or TSP mass concentration ($\mu\text{g}/\text{m}^3$)**
- **Real time optical measurement of PM10, PM2.5, PM1 and TSP mass concentration ($\mu\text{g}/\text{m}^3$) using a single inlet**
- **Real time particles counting and classification by range size**

EXCLUSIVE FEATURES:

- True volumetric air flow control with 3 atmospheric pressure and temperature sensors
- Sampling flow-rate continuously regulated to the atmospheric temperature and pressure: reduces evaporation artefacts of volatile compounds (mandatory for PM2.5 according to EU regulations)
- Automatic calibration of the real time optical module (CPM) to the reference measurement (β gauge)
- Flow calibration possible during the measurement
- Built-in reference gauge for calibration: no need for factory re calibration
- Automatic Span Calibration checks (option)
- Calibration screen for atmospheric pressure sensors
- Regulated Sampling Tube (RST) compliant with CEN PM10 and US-EPA standard: sample not affected by seasonal or geographical factors and avoids evaporative losses of semi-volatile particles
- Fiberglass tape with 3 years of autonomy of continuous sampling with daily cycles (1200 cycles)
- Low activity C^{14} sealed flat source with analyzer lifetime duration
- Rugged instrument, not sensitive to vibration, humidity, temperature...
- **New:** On board web server compatible with any internet browser. ESA Connect™ user interface with on-line help for the display, configuration, maintenance, diagnostics or software updating of the analyser, remotely, from any PC, tablet or smartphone.

MAIN APPLICATIONS:

- Ambient air quality monitoring
- Indoor dust monitoring
- Working places



Suspended Particulate Monitor MP101M with CPM option

MP101M SPECIFICATIONS:

- Measurement ranges: user-programmable, up to 10 000 $\mu\text{g}/\text{m}^3$
- Lower detectable limit: 0.5 $\mu\text{g}/\text{m}^3$ (24h average)
- Measurement cycles: 1/2, 1, 2, 3, 6, 12, 24 h, user-selectable (up to 96 hours)
- Sample collection period: 1/4, 1/2, 1, 2, 3 h..., user-selectable
- Counting time: 10 to 300 sec, user-selectable
- Beta Source: sealed Carbon 14 (1.6MBq \pm 15%)
- Detector: high performance Geiger-Müller counter
- Sampling flow rate: 1 m^3/h
- Standard filter: fiberglass tape (width 35mm, 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 (WxDxH)
- Weight: 15 kg (without pump)
- Operating temperature: +10 to +40 °C
- Serial link: 1 RS 232/RS422
- Ethernet (RJ45) and USB ports
- On-board webserver with remote ESA Connect interface included

CPM MODULE SPECIFICATIONS:

- Technology: light scattering
- Max. number of counted particles: 200,000 / cm^3
- Optical source: red visible laser diode
- Detector: photodiode
- Accuracy: $\pm 5\%$ (compared to the reference method over 24h)
- Temporal resolution: 1 second
- Dimensions: 285 x 131 x 67 mm (WxDxH)

OPTIONS AND ACCESSORIES:

- **US EPA and EU-CEN** compliant sampling inlets
- Automatic Span checks with 5% deviation alarm
- **Temperature-regulated sampling tube (RST):** 1 m, 1.5m, 2 m, 2.75 m, compliant with **CEN PM10 Directive**
- 2 max. ESTEL electronic boards with: 4 independent analog inputs / outputs, 4 remote control inputs, 6 dry contacts outputs
- External pump assembly (diaphragm - 9,5 kg or rotary vane - 7 kg)
- 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 leak test
- HEPA filter for zero test

CERTIFICATIONS / STANDARDS:

Standard compliance: ISO 10473 : 2000

- for PM10: - US-EPA (EQPM-0404-151)
- EN 12341 (I-CNR 087/2004, F-LCSQA)
- for PM2.5: - EN 14907 (F-LCSQA)
- US-EPA (EQPM-1013-211)
- J-MOE PM 2.5 Type approved

MEASUREMENT PRINCIPLE:

The **MP101M**, based on the beta attenuation measurement technique, determines the particles 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 of dust, whose number is proportional to density. Absorption is thus a function of the mass of the irradiated material, independently of its physico-chemical nature.

The **CPM (Continuous Particulate Measurement)** principle is based on the measurement of the light scattered at a small angle, close to forward scattering, where the signal is not sensitive to the particle's nature. The intensity of this signal is continuously analysed, in order to classify the particles into 7 size ranges. Knowing the number and size of detected particles, a powerful algorithm is applied to continuously convert these data into mass concentration.

Combination of both technologies allows a precise and real-time monitoring of particles with direct measurement of PM10, PM2.5 and PM1 simultaneously.

