

SM 200: PM10, PM2.5, SAMPLER



A Total Solution for Monitoring of Particulate Matter

The particulate matter monitor SM 200 can be used for both automatic measurement and filter sampling. The SM 200 can be equipped with a PM10 head or a PM2.5 head, designed for either 2.3 m³/h or 1.0 m³/h.

The SM 200 is a cost-effective solution for particulate matter monitoring and sampling. It can be completely remote controlled and is ideally suited for use in modern monitoring stations.

The SM 200 can generate both 24-hour data based on

beta attenuation and real time data based on differential pressure measurements. Due to the extensive automatic QA/QC procedures, the SM 200 operates with high accuracy and precision.

The SM 200 meets the new regulation for automatic monitoring of PM10 and PM2.5. It also meets the new regulation for particulate matter sampling on filter membranes for further analysis of cadmium, nickel, PAH and other substances.

Features

Monitoring and Sampling

The SM 200 provides both automatic monitoring of particulate matter as well as sampling of air on membrane filters. Standard 47 mm membrane filters are used.

International Approvals

- Approved by UBA, CNR among others
- Reference sampler according to EN 12341, when equipped with 2.3 m³/h inlet head.

Beta Attenuation

The SM 200 is an automatic particulate monitor for monitoring of PM10 and PM2.5. A filter is loaded into the filter magazine and a Geiger counter detects the beta attenuation before and after sampling. The response time of the instrument is 1–24 hours.

Real Time Measurements

The SM 200 can generate real time data by using differential pressure measurements. Hourly mass concentration values are presented based on the pressure drop over the filter during sampling. This gives a good estimate of the actual mass concentration.

The differential pressure measurement is calibrated daily, using the results from the beta attenuation.



Extra filter containers minimize maintenance and makes changing of filters easy



PM10 inlet head

Built-in Calibration

Span, linearity and zero calibrations are automatically controlled at regular intervals.

TS 200 – Temperature Stabilized Inlet Tube

The TS 200 is used for keeping the sample air at ambient temperature. Since the temperature of the sample is controlled, no factors have to be added to the measurement results. This means that the SM 200 always provides accurate results, unaffected by both seasonal and geographical factors. The TS 200 is available as an option and has to be ordered separately.

QA/QC Procedures

The 47 mm filters can be weighed according to gravimetric reference methods. The results can be used for quality control of the automatic measurements.

Extensive QA/QC procedures regulate the operation of the SM 200 by use of internal sensors such as:

- | | |
|----------------------------|-----------------------|
| ■ External temperature | ■ Inlet flow rate |
| ■ External pressure | ■ Geiger temperature |
| ■ Filter temperature | ■ Geiger counts |
| ■ Filter relative humidity | ■ Geiger high voltage |
| ■ Filter pressure drop | |

Serial Communication – Remote Control

The instrument is equipped with three RS 232 serial ports that can be used for connecting the SM 200 to a PC, modem or data logger. By using the serial ports, the SM 200 can be remotely controlled, which means that data retrieval and other operations can be performed at distance. The SM 200 is ideally suited for use in a monitoring network.

Technical Specifications

Dimensions, sampling module	440×630×300 mm. ¹
Dimensions, pumping module	310×280×250 mm. ¹
Weight, sampling module	25 kg
Weight, pumping module	10 kg
Voltage supply	230 V/50-60 Hz
Power consumption	800 W
Display	LCD, 4 × 20 characters
Keypad	Membrane
Data storage	> 100 sets of data
Serial interface	3×RS 232
Analogue output	0–10 V/4–20 mA
Digital status output	Closing relay
Degree of protection	IP 20
Operating temperature	+5°C–+35°C (+40°F–+100°F)

Performance

Operative flow rate	16.67 l/min alt. 38.3 l/min
Mass measurement range	0–1000 µg/m ³
Detection limit	0.5 µg/m ³ (24 h average)
Response time	1–24 h, beta attenuation 1–24 h, differential pressure measurements

Radioactive Source Data

Source	¹⁴ C polymethyl methacrylate
Total activity	9.9 Mbq (267 µCi)
Specific activity	55.5 Mbq/g (1.5 mCi/g)
Half life	5730 years
Type	Beta

SM 200 Includes as Standard

Analysar unit 230/115 V, 1.0 m³/h
 Pump module 230 V
 Beta source
 2 filter containers
 40 filter holders
 2.5 metres stainless steel inlet tube

¹ Length × Width × Height



Filters and filter holder

SM 200 analyser unit equipped with the TS 200, which is used for keeping the sample air at ambient temperature. The TS 200 includes an inlet tube, ventilation hose, drain hose, fan and flanges

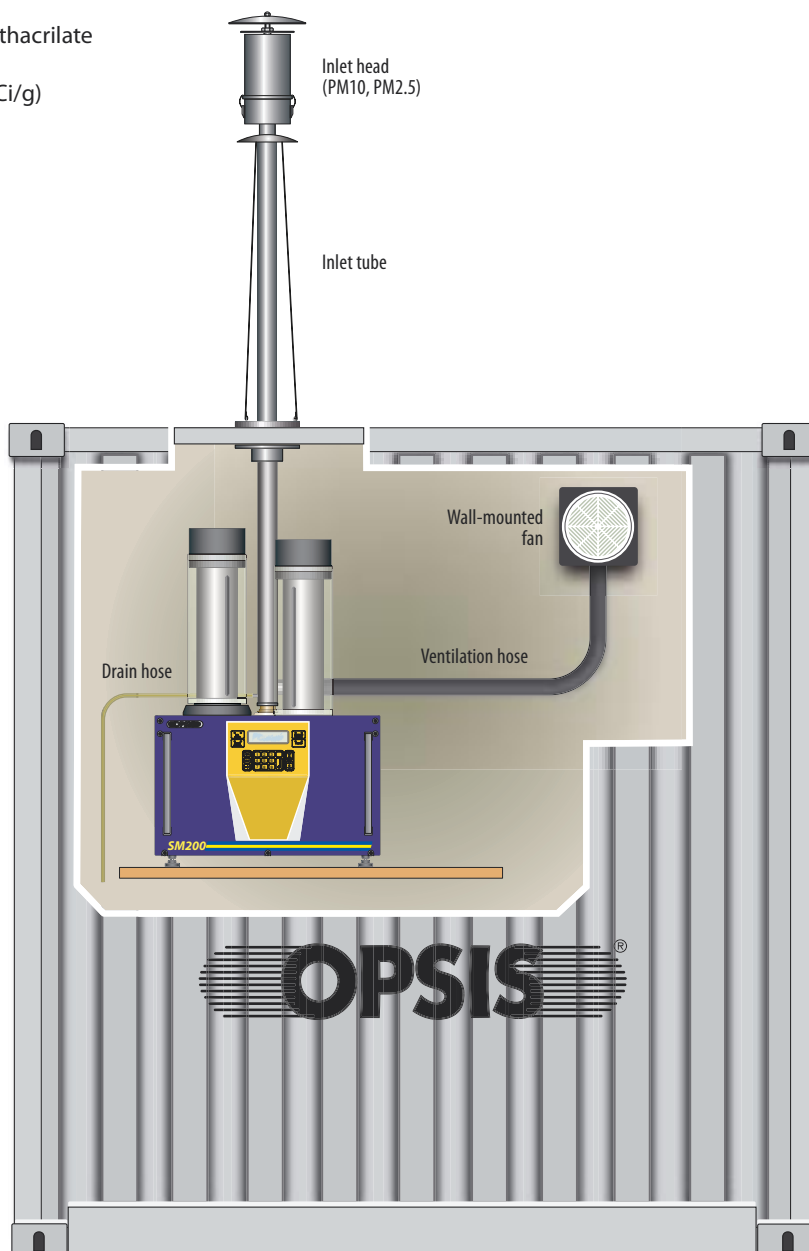
Options (separately ordered)

Inlet head PM10 at 1.0 m³/h (M000501)
 Inlet head PM2.5 at 1.0 m³/h (M000502)
 Inlet head PM10 at 2.3 m³/h (M000512)
 Inlet head PM2.5 at 2.3 m³/h (M000513)
 Analyser unit upgraded to 2.3 m³/h (M000514)
 Analyser configured as sampler (SM200-SAMP)
 Analyser configured as atmospheric stability monitor (SM200-STAB)
 Differential pressure measurements (M000990)
 Analyser equipped with extra memory (E027146)
 TS 200, temperature stabilized inlet tube (TS200)
 I/O system for additional inputs and outputs (IOU020)
 Pump module, 115 V (PL200-1)
 Ethernet connection (E084156)

Accessories

Filter opener (A0974100)
 Consumables kit (M300500)
 Teflon filters, 2.0 µm, 100 filters per box (M000900)
 Teflon filters, 1.0 µm, 100 filters per box (M000901)
 Cellulose filters, 1.0 µm, 100 filters per box (M000905)
 Extra filter container (M201680)

Specifications subject to change without notice



Why SM 200?

- A cost-effective solution for particulate matter monitoring and sampling
- Meets the new regulation for automatic monitoring of PM10 and PM2.5
- Meets the new regulation for sampling on 47 mm membrane filters for further analysis of cadmium, nickel, PAH and other substances
- Samples at ambient temperature – no need for correction factors
- The SM 200 can be used for both automatic measurement and filter sampling for maximum performance and a minimum of maintenance



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