OPSIS®

Sampler and Monitor for PM10 and PM2.5

A total solution for monitoring particulate matter

Real-time particle monitoring option

INTERNATIONALLY APPROVED

The particulate matter monitor SM200 can be used for both automatic measurement and filter sampling. The SM200 can be equipped with a PM10 head, a PM2.5 or a TSP head, designed for either 2.3 m^3/h or 1.0 m^3/h.

The SM200 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 SM200 can generate both 24-hour data based on beta attenuation and real-time data based on particle counting. Due to the extensive automatic QA/QC procedures, the SM200 operates with high accuracy and precision.

The SM200 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 SM200 provides both automatic monitoring of particulate matter as well as sampling of air on filters. Standard 47 mm filters are used.

International Approvals

- Approved by TÜV, MCERTS, U.S. EPA, and CNR among others.
- Reference sampler according to EN 12341, when equipped with 2.3 m^3/h inlet head.

Beta Attenuation

The SM200 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 measurement time of the instrument is 8–24 hours.

Real-Time Particle Measurements

The SM200 can generate real-time data using particle counting. A laser diode based particle counting system is placed before the sampling filter. The number as well as the size of the particles are measured. The real-time data is calibrated using the results from the beta attenuation measurements.

Built-in Calibration

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

TS200 – Temperature Stabilized Inlet Tube

The TS200 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 SM200 always provides accurate results, unaffected by both seasonal and geographical factors. The TS200 is available as an option and has to be ordered separately.

Extra filter containers minimize maintenance and make changing of filters easy

Filters and filter holder

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 SM200 by use of internal sensors such as:

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

Serial Communication – Remote Control

The instrument is equipped with three RS232 serial ports that can be used for connecting the SM200 to a PC, modem or data logger. By using the serial ports, the SM200 can be remotely controlled, which means that data retrieval and other operations can be performed at distance. The SM200 is ideally suited for use in a monitoring network.

Technical Specifications

Dimensions, sampling module	630×440×300 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	120 days (based on 24 h sampling)
Serial interface	3×RS 232
Analogue output	0–10 V/0–20 mA
Digital status output	Closing relay
Degree of protection	IP 20
Operating temperature	+5˚C– +40˚C (+40˚F – +100˚F)

Performance

Operative flow rate	16.67 l/min alt. 38.33 l/min
Mass measurement range	0–1500 µg/m^3
Detection limit	0.5 µg/m^3 (24 h average)
Measurement time	8–24 h, beta attenuation 1 min.–24 h, particle counting

Radioactive Source Data

Source	C^{14}
Total activity	0.5 MBq (13 µCi)
Half life	5730 years
Type	Beta

SM200 Includes as Standard

Analyser unit 230/115 V, 1.0 m^3/h / 2.3 m^3/h
Pump module 230 V
Beta source
2 filter containers
40 filter holders
2.5 m stainless steel inlet tube

[1] Length × Width × Height

PM10 inlet head

SM200 analyser unit equipped with the TS200, which is used for keeping the sample air at ambient temperature. The TS200 includes an inlet tube, ventilation hose, drain hose, fan and flanges.

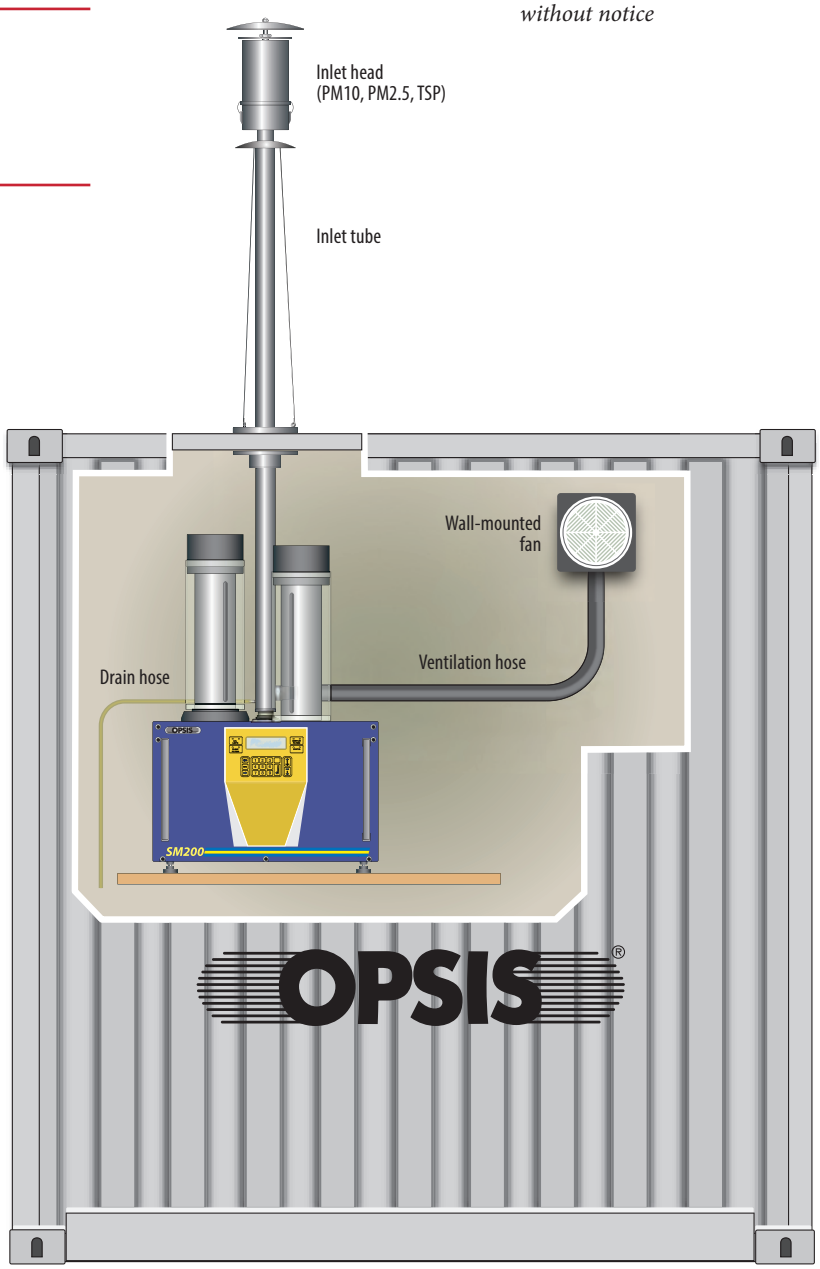
Options (separately ordered)

Inlet head PM10 at 1.0 m^3/h (M000501)
Inlet head PM2.5 at 1.0 m^3/h (M000502)
Inlet head PM10 at 2.3 m^3/h (M000512)
Inlet head PM2.5 at 2.3 m^3/h (M000513)
Real-time particle measurements based on particle counting (RTPM)
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 (M300505)
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)
Glass fibre filter, 100 filters per box (M000920)
Extra filter container (M201680)

Specifications subject to change without notice



Why SM200?

OPSIS®

- A cost-effective solution for particulate matter monitoring and sampling
- Real-time measurements of PM10 and PM2.5 based on particle counting
- Meets the new regulation for automatic monitoring of PM10 and PM2.5
- Meets the new regulation for sampling on 47 mm filters for further analysis of cadmium, nickel, PAH and other substances
- Samples at ambient temperature – no need for correction factors

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