Atmospheric PMx particles monitor

SWAM 5A Dual Channel Monitor

**Main characteristics**

- In compliance with national and international regulations regarding air quality control for suspended particulate matter
- High quality standard of representative suspended PMx sampling phase
- High quality standard of the PMx samples mass determination phase
- Innovative implementation of the β technique, covered by International Patent, that uses a unique integral source detector system and auxiliary measures on “spy filters”
- Long working autonomy without operator’s intervention, thanks to the automatic management of max.72 filter membranes
- Complete operation management via GSM Modem
- Automatic management of the sampling cycles (real-time acquisition of the parameters and relative quality controls)

SWAM 5A Dual Channel Monitor is an automatic sampling and mass measurement system of suspended atmospheric particulate matter, working with two independent sampling lines. The sample is accumulated on a filter device and its mass is determined using an innovative technique based on the β attenuation method.

SWAM 5A Dual Channel Monitor allows a high quality standard monitoring of the average mass concentrations trend of two PMx particulate fractions (for example PM10 and PM2.5). Moreover, the samples accumulation on filter membranes allows the chemical characterization of the particulate matter and the direct gravimetric determination of their mass.

SWAM 5A Dual Channel Monitor can also be used for the metrological evaluations of the particulate matter sampling and mass measurement systems.

**SWAM Dual Channel Monitor can be used as a reference sampler.**

Infact, the instrument is certified TÜV and MCERTS, in compliance with EN12341 and EN14907. Moreover, the instrument can sample the suspended particulate matter (PM10, PM2.5) in compliance with the technical instructions described in US EPA regulations about:

- PM10 sampling, using the US EPA 40 CFR part 50 1 m3/h sampling inlet
- PM2.5 sampling, using the US EPA 40 CFR part 50 1 m3/h sampling inlet with WINS PM2.5 impactor.
### Technical Specifications

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<th>Specification</th>
<th>Details</th>
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<tr>
<td>Mass measurement operating interval</td>
<td>Mass thickness till 10 mg/cm²</td>
</tr>
<tr>
<td>Mass thickness measurement</td>
<td>reproducibility ± 2 µg/cm²</td>
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<tr>
<td><strong>β</strong> source</td>
<td>¹⁴C with nominal activity 3.7 MBeq (100 µCi)</td>
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<td>Operating flow rate</td>
<td>Programmable within the range 0.8 – 2.5 m³/h</td>
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<tr>
<td>Flow rate measurement</td>
<td>reproducibility 1% of the measured value</td>
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<tr>
<td>Flow rate measurement relative uncertainty</td>
<td>2% of the measured value</td>
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<tr>
<td>Flow rate control</td>
<td>Automatic, with regulation valve activated by a step motor. Stability in the flow rate control better then 1% of the required nominal value</td>
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<tr>
<td>Max pressure drop</td>
<td>40 kPa at 2.3 m³/h</td>
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<tr>
<td>Loader/Unloader capacity</td>
<td>n° 36 filter cartridges (or 72 on demand)</td>
</tr>
<tr>
<td>Filter cartridges</td>
<td>Standard supply 47 mm filter membranes</td>
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<td>I/O devices</td>
<td>RS232 interface for the connection to a PC</td>
</tr>
<tr>
<td>Power supply</td>
<td>230 V (± 10%) 50 Hz single-phase</td>
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<tr>
<td>Absorbed electric power</td>
<td>1200 W (max)</td>
</tr>
<tr>
<td>Power supply continuity in direct current</td>
<td>2 12 V 3.5 Ah floating batteries - Autonomy to complete mass measurements and filters movements</td>
</tr>
<tr>
<td>Air compressor unit</td>
<td>12 l/min at 300 kPa</td>
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**Operating conditions inside the installation cabinet**
- Temperature within 5 and 35 °C
- Relative Humidity lower then 85% (with no condensate)

**Storage conditions**
- Temperature within - 10 and + 55 °C
- Relative Humidity lower then 85% (with no condensate)

**Dimensions (W x D x H) and Weights**
- Sampling unit 430 x 540 x 370 mm 36 kg
- Vacuum pump unit 200 x 320 x 200 mm 10 kg
- Air compressor unit 180 x 320 x 200 mm 18 kg

Sampling inlet for PM10 cut size (LVS-PM10 in compliance with EN12341 standard, nominal flowrate 2.3 m³/h)
Sampling inlet for PM10 cut size (LVS-PM10 with nominal flowrate 1 m³/h, equivalent to LVS-PM10 model EN 12341)
Sampling inlet for PM2.5 cut size (LVS-PM2.5 in compliance with EN14907 standard, nominal flowrate 2.3 m³/h)
Sampling inlet for PM2.5 cut size (LVS-PM2.5 model with nominal flowrate 1 m³/h, equivalent to LVS-PM2.5 model EN14907)
Sampling inlet for PM1 cut size (LVS-PM1 model, nominal flowrate 2.3 m³/h)

**Outdoor cabinet (on demand)**
Polypropylene structure (PP)
Dimensions (W x D x H) 750 mm x 750 mm x 1850 mm

**Air conditioner for cabinet (on demand)**
Cooling capacity (DIN 3168): 0.95 kW
Regulation range 20 - 35 °C
Absorbed power 0.63 kW