

Automatic dust sampling system to collect particulate matter PM₁₀ or PM_{2.5} or PM₁

Type: PNS 18T-3.1 DM / PNS 18T-6.1 DM

The dust collection system comprises a low-volume sampler unit (LVS) and a filter changer with an intake tube and sampling head (inlet) to collect particulate matter from outdoor air. It functions as per EN 12341:2014 (PM₁₀ and PM_{2.5}) specifications. The low-volume sampler and the filter changer are installed in a single housing.

- Equivalent according to EN 12341 (PM₁₀ and PM_{2.5})
- Dust sampling system for filters with a diameter of 47mm
- Magazines with 18 filter cassettes
- Data storage on secure Digital (SD) card
- Data transmission via RS232 port using e.g. Bavaria -Hessia protocol
- Jacketing tube (using outdoor air to ventilate the tube connector) in accordance with EN 12341(5.1.3):2014
- Options
 - *Regulated Peltier cooler for filter storage in accordance with EN 12341(5.1.8):2014*
 - *Data transmission using integrated GPRS modem*

The sequential sampling systems in the PNS 18T-DM series are used for continuous collection and monitoring of particulate matter without having to change filters manually. The system is made up of a Model LVS 3.1 or MVS 6.1 sampler unit, an automatic filter changer with 18 filter cassettes, an intake tube and an inlet installed in a stainless steel housing.

The filter changer housing is ventilated to prevent condensation and icing. Sampling heads such as the models TSP, PM₁₀, PM_{2.5} and PM₁ and the like can be used.

The specimen sampling head is attached so as to be gas-tight at the 40 mm I.D. aluminum intake tube associated with the sampling system; the tube is polished and anodized on the inside. This helps to avoid losses due to particles being deposited on the interior walls as a result of turbulence-induced precipitation, for instance. Two magazines with 18 filter cassettes each are used in the filter changing unit.

A maximum of 18 filter cassettes are arranged on top of each other in the cylindrical magazine. Before sampling, the filter cassettes are inserted into the magazine in a laboratory (or inside the sampling system if necessary), starting from the top. A lockable mechanism at the bottom of the magazine prevents the cassettes from inadvertently falling out of the magazine. For transportation purposes, the magazines are equipped with tight covering caps at their ends to keep them from being contaminated by airborne particles. The upper covering cap remains on the magazine during operation of the sampling system.



During operation, after the completion of one sampling period, a forcibly guided handling system takes a cassette with a clean filter from the storage magazine and inserts it into the sampling position. Simultaneously, the filter cassette with the dust-laden filter is removed from the sampling position and inserted into the magazine for exposed filters. The use of a Geneva drive prevents any obstructions of the complex movements of the components.

Each sampling system comes with three magazines and a total of 35 filter cassettes. When the magazines are changed, one filter cassette remains in the sampling position; therefore the replacement magazine may only be fitted with up to 17 filter cassettes. The 18th filter is not used for sampling, but is used as a reference filter for detecting potential particle deposits. The filter magazines also serve as transport containers. In standard configuration, the filter changer is delivered with filter cassettes for 47 mm diameter filters and an intake tube 800 mm in length. Intake tubes in other lengths, up to a maximum of 3500 mm, are available to match customer specifications.

The filter changer can be delivered with a Peltier cooling unit to ensure that the temperature of the filters installed will not exceed 23 °C during storage inside the system (up to an ambient air temperature of 35 °C).

Dust sampling system Type PNS 18T-3.1 DM / PNS 18T-6.1 DM

Technical Data Type PNS 18T-3.1 DM / 6.1 DM

Flow rate:

PNS 16T-3.1 (controlled):	1.0...3.5 m ³ /h (Nm ³ /h)
PNS 16T-6.1 (controlled):	1.5...5.5 m ³ /h (Nm ³ /h)

Accuracy:	< 2 %
Sampling time:	1 min...1000 h
Power supply:	230 V, 50/60 Hz

Power consumption

PNS16/18T-3.1:	approx. 300 VA* / 420 VA
PNS16/18T-6.1:	approx. 350 VA* / 470 VA

Filter diameter:	47 mm
Diameter of loaded filter surface:	41 mm

Dimensions with feet:

Width	460 mm* / 520mm
Height	1100 mm
Depth	300 mm

Interfaces

Serial Interface RS232:	2
SD-drive:	1
GPRS (optional):	1

Weight

PNS 16T-3.1:	approx. 42 kg* / 48 kg
PNS 16T-6.1:	approx. 42.5 kg* / 48.5 kg

Noise level according to DIN 2058:	<< 35 dBA
Operating temperature range:	-30...+50 °C
Operating humidity range:	0...100 % rH
IP classification:	IP 55

*without cooling unit

Scope of delivery:

Basic device PNS 18T with integrated Low-Volume Sampler LVS 3.1 or MVS 6.1, mechanical changer for filters, jacketing tube diameter 80 mm, suction tube diameter 40 mm, 3 filter magazines with total 35 filter cassettes, 2 x SD-card for data storage (minimum 128 MB, 1 x transmission cable, 1 x USB SD card reader, calibration protocol, key and instruction manual, housing made from stainless steel

