DustCheck DPM-16

Sequential sampler

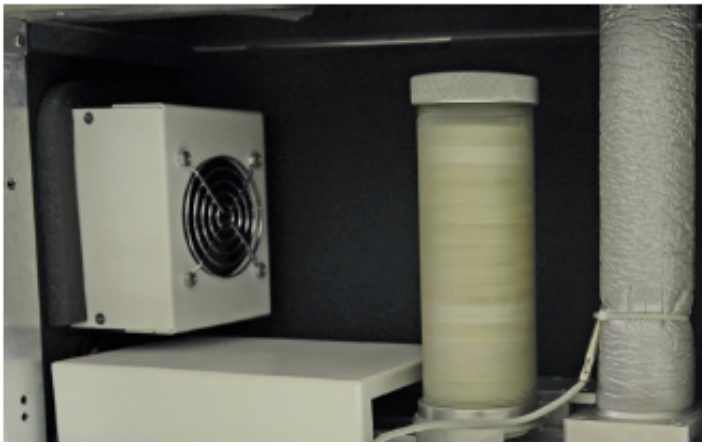
- NEW!
- DustCheck DPM-16 is the new sequential sampler complying with EN-12341:2014 European standard for PM10 and PM2,5 particles. This directive updates the two previous EN12341 and EN14907 standards. It provides two sampling methods, one with high volume devices (1,13/1,27 m3/min – Annex B) and one with medium volume devices (38 l/min).

PM10 and PM2.5 sampling in accordance with EN-12341:2014 requirements
The high-volume sampler considered as “reference sampler” is the same used in EPA directive (see section 40 Part 50.11) for the same application. With regard to medium-volume samplers, the recommended impactor is - in this case as well - the one directly referred to in section A of the above mentioned EPA directive (Annex A). These PM10 and PM2,5 impactors obtained the certification of compliance with TUV Rheinland Institute.
The sequential sampler for PM10 and PM2,5 particles consists in a system contained in an epoxy-coated, climate-resistant aluminum structure including sampling unit, flow controller and precision mechanical components for the handling of up to sixteen 47mm filters, housed in inert-material filter holders.
It is provided with twin head vacuum pump, with free blowing air volume up to 50 l/min capable of maintaining the sampling conditions constantly to 38,3 l/min in accordance with regulation.

Technical features
- High-efficiency vacuum pump, 5m3/h
- Electronically-controlled constant flow, accuracy +/-2%
- Application range between 5 and 50 l/min
- Sampling volume monitored by an embedded volumetric meter, accuracy +/-2%
- Sampling flow monitored by a precision electronic device, Mass-Flow +/-1%
- Barometric Pressure Sensor and temperature sensors at the flow meter, at the sampling point (filter holder), for ambient temperature detection and temperature monitoring in the storage area of sampled filters.
- Setting and monitoring of the sampling flow standard deviation with stop mode in case of excessive pressure drops and related display during sampling phases.
- Different types of sampling sequences can be optionally set for sampling time or volumes, for one day or up to 16 days. Program conditions can be optionally changed during the sampling phases through real-

time resetting.
- Calculation of the temperature difference between external environment and sampling filter
- Instrument control settings, including leak test and monitoring of quantity measuring sensors, fault alarms settable as well. Filter pressure drop monitoring during sampling through the measurement of the differential pressure.
- Connection with a sensor for the detection of wind speed and direction (optional), and for rainfall detection (optional).
- RS232 data output for data download on SDC2000™ software (included with sampler delivery)
- Data storage in memory and further data transfer through removable USB device. This device allows also electronic board firmware upgrade.
- Serial printer embedded in front panel; it can provide a printout of the average and absolute data of the sampling parameters at the end of each sampling cycle.
- Designed for use with GSM/GPRS modem (optional modem) for sampling remote management and for programming of sampling phases directly from your PC (tab manager optional)
- Storage of sampling data in case of power failure with sampling restart after main power is restored (the event will be reported in the final summary).
- Automatic device for filter exchange with fault alert for blockage of the mechanism based on a single stepper motor

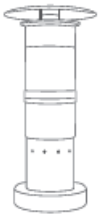
Cooling Device for filter holder housing
The DusctCheck DPM16 sequential sampler consists in two compartments, physically separated and insulated with innovative polyurethane closed-cell materials. The reference standard requires the temperature of the sampled filters to be kept to a value not exceeding 23°C.
This feature can be reached thanks to a dry cooling device, capable of adjusting and keeping the temperature constant in the storage compartment of the sampled filters, allowing filters to be properly preserved at the desired conditions.



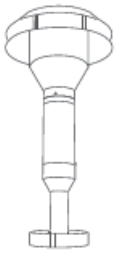
Sampling accessories
Dustcheck DPM 16 sampler can be associated, for proper use, with different types of accessories such as impactors/pre-selectors or for calibration. At the time of the instrument purchase, the correct accessories (not included in the basic instrument) must be selected for use. These are:

TUV certified pre-selector for PM10 particles (EN-12341:2014)
Cod. 600/LWSPM10.25_2

TUV certified pre-selector for PM2,5 particles (EN-12341:2014)
Cod. 600/LWSPM25



LVS PM10/US-EPA 16,7 l/min
Cod. 600/PM10-EPA01K

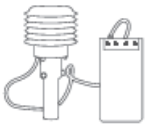


Upgrade Kit from PM10-EN Pre-selector to PM2,5, TUV cert. - EN Pre-selector **Cod. 600/LWS25ADK**

Wins Impactor PM2,5 16,7 l/min
Cod. 600/WINS-2,5PM01

TSP adaptor for DPM systems
Cod. 600/DCB1001K-A5

DeltaCal Calibrator (Calibration Range 10 – 60 Lpm) provided with carry case
Cod. ML/DC100



Adaptor for DPM systems calibration
Cod. 600/DCB1001CAL

Support for DPM sequential unit
Cod. 600/AFSC2001K

Delta Cal-Mesa Lab certified flow calibrator

DeltaCal Calibrator is the first continuous volumetric flow calibrator giving a direct indication of volumetric flow rate, standard flow rate, barometric pressure, ambient temperature and filter temperature in one instrument.
It has been developed to test and calibrate PM10 and PM2,5 sampling systems in compliance with US EPA and CEN requirements. Three different flow rates for three different applications in the field of the environmental air pollution control.

Technical features	
Reading accuracy	0,75%
Flow Range (l/min)	10-60
Temperature Range (°C)	-30 / +40°C
Barometric Pressure Range (mBar)	534 to1066 mBar

Leak test

CEN and EPA standards require PM10 and PM2,5 samplers to be leak tested over the entire suction pipeline. More specifically, EN 12341:2014 part 5.1.7.1 standard requires that the leak tightness of connections should be checked over the entire pneumatic line of the sampler.
This test provides for the removal of the impactor, being clear that it would be difficult to perform the test if this device was mounted. DPM16 sampler makes use of an automatic internal device to perform the leak test, so as to allow users to perform the test at any time, before or after sampling.

Filter Membranes for PM10 and PM2,5 sampling

The four types of filter membranes that can be used for the sampling of PM10 and PM2,5 fine particulate are reported under paragraph 5.1.4 of the above mentioned standard. One of the main conditions is linked to the separation efficiency required per category of materials. The requested value is 99,5% for a particle size of 0,3µm. All membranes proposed in this catalogue comply with this requisite. The filter media allowed for sampling use are: quartz fiber and glass fiber, provided that they are free from binders that could interfere in chemical analyses for metals, IPA, PTFE and Teflon-coated synthetic fibers. The above mentioned standard, specifies the conditions and the tests needed to check for integrity at the end of the various handling phases, filter holder loading and unloading, transport of the sample to the laboratory and conditioning with final weighing.
In this situation, microfiber filters present some undesirable features linked to their composition and to the origin of materials. The best choice from the point of view of integrity is PTFE, preferably if supported by a rigid sealing ring. PTFE filter could risk a strong back pressure caused by sample and moisture overload due to its intrinsic hydrophobic properties, under specific environmental conditions and with high air humidity. This event could ultimately affect the constancy of the flow rate, a fundamental rule for the correct use of impactors. PTFE membranes are optionally available with individually numbered and sequenced sealing ring. This option allows users to better identify the different samples. AMS Analitica offers a full range of filters to be used for the sampling of PM10 and PM2,5 particles, as follows:

Part number	Description
600/AW-MLTPM25060N	PTFE Membrane with 47mm-2µm sealing ring, pack.: 60 individually numbered pcs
NFS/GF1-47-100	GF1 grade Glass Fiber Filter, 47mm, Package: 100 pcs
NFS/GF2-47-100	GF2 grade Glass Fiber Filter, 47mm, Package 100 pcs
FAN/MFQ047	MFQ grade Quartz Fiber Filter, 47 mm, Package 25 pcs
MKT/420008 MK360	MK360 Grade Quartz microfiber filter, 47mm, Pack. 25 pcs

PM10 and PM2,5 sampling with Selective Wind Monitoring

Dustcheck DPM16 sampler can be interfaced with a combined sensor for wind speed and direction detection (optional). The user can choose between two types of sensors: a traditional one with mechanical elements and a second one with a speed and direction detection device with ultrasonic sensors.
The user will be able to set the sampling by setting via software the area of origin on a dial scale 0°-360° after connecting the sensors to the sampler and after selecting the desired type of sensor (mechanical or ultrasonic).
Additionally, the user will be able to set the minimum speed allowed to start sampling in automatic mode, stopping it once the wind event will be concluded. The kit includes 2m pole, floor stand, sensor and 5m connection cable to the sampler.

Part Number	Description
600/GRMET001K	Mechanical weather sensor set including cable, pole and bracket
600/GRMET002K	Ultrasonic weather sensor set including cable, pole and bracket

The PM10 and PM2,5 sequential sampler DustCheck DPM16 has been designed and manufactured to meet the requirements of EN-12341:2014 European regulation in addition to US-EPA Cfr.40 compliance (if equipped with US-EPA impactor unit). It is housed in an epoxy-coated insulated aluminum structure and can work in adverse climatic conditions.

PM10

PM2,5

Additional components for PM10 and PM2,5 sampling according to EN-12341-2014 regulation:

Constant-flow high-volume samplers

Before the unification of the rules dealing specifically with the monitoring of PM fraction, the references to the legislation respectively concerning PM10 fraction with EN-12341:1996 and PM2,5 fraction with EN-14907:2005
were two.
The first version of EN12341 (B2) and the corresponding version of EN14907 (5.1) provide the two alternative applications for low-volume sampling through high-volume samplers.
These samplers, while respecting the same requirements set by legislation, ensure the possibility of obtaining a higher volume of sample in the same sampling delay.
This option ensures optimal results for what concerns the sensitivity of the analysis, particularly in those situations where very low limit values established by the law for single pollutant have to be dealt with.
AMS Analitica, through AirFlow™HVS sampler models, manufacture both systems dedicated to PM10 and PM2,5 high-volume sampling, in compliance with the requirements of the respective standards.
Both methods have been confirmed by 2014 upgrade, making AMS Analitica the company that offers the most complete solution of its kind on the market at the moment.

Certified PM Impactors

AMS Analitica manufacture and offer a large variety of sampling inlets and cyclones. We can considera s follow:

- PM inlets with inertial impactors with EN-12341:2014 compliance
- PM inlets with inertial impactors and cyclones with US EPA compliance

PM impactors with EN 12341:2014 compliance

The European regulation offer two different options to collect fine particles in air with a filter media: one in a standard low volume flow rate and another one with high volume sampling devices. AMS Analitica manufacture all these kind of impactors and received the official accreditation from TUV Rheinland laboratory. All parts are in anodized aluminum to resist at strong atmospheric conditions. The following chart show the EN impactors features and part numbers.

Part Number	Description	Sampling flow	PM cut-off
600/LWSPM10.25_2	PM10 EN certified impactor	38,3 liters per minutes	PM10
600/LWSPM01	PM2,5 EN certified impactor	38,3 liters per minutes	PM2,5
600/AFPMA1	HVS PM10 CEN-US-EPA Impactor	1130 liters per minutes	PM10
600/AFPMA251001HK	HVS PM2,5 CEN Impactor	500 liters per minutes	PM2,5

PM impactors with US EPA compliance

US EPA has a different way to collect PM suspended particles. Different inlets and different flow rates: 16,7 liters per minute. Originally US EPA has detected as ideal impactor for PM2,5 raction a WINS impactor, small in line impactor connected directly to PM10 down tube. In the last year a different approach move to a big change, from an impactor to a Sharp Cut Cyclone. AMS offer an accredited sharp cut cyclone to replace the Wins impactor. Cyclone has better performance and less ambient influence compared to the WINS. Sharp Cut cyclone can fitted in any DustCheck DPM ambient sampler.

Part Number	Description	Sampling flow	PM cut-off
600/PM10EPA-01K	US EPA PM10 low volume impactor	16,7 liters per minutes	PM10
600/WINS22,5-PM01K	US EPA Wins impactor PM2,5	16,7 liters per minutes	PM2,5
600/ML22565	Sharp Cut Cyclone PM2,5	16,7l iters per minutes	PM10
600/AFPMA1	HVS PM10 CEN-US-EPA Impactor	1130 liters per minute	PM2,5

600/DCDPM1601K

Recently, a great deal of attention has been focused on the sampling of toxic substances in the form of organic vapors and particulate during Community rules upgrading. Such decrees require the closest monitoring of all the substances present in the external environment and particularly harmful to human beings, such as: fine particles (PM10 and PM2,5), micropollutants (IPA, PCDD, PCDF), ozone and relevant precursors (VOC and formaldehyde), metals. The content of this brochure is a full presentation of the new sequential sampler from AMS Analitica, Dustcheck DPM16, designed and manufactured in accordance with the requirements introduced into EN-12341:2014 Directive.


Analitica
DustCheck
DPM16

Certificazioni TUV
preselettori PM10 e PM2,5

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TÜVRheinland®
Precisely Right.

DAkkS

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Cologne, 29 June 2012

Certification of the European sampling inlet "TESTA DI PRELIEVO PM2.5 2.3mcubi/h" according to the standard EN 14907:2005

Dear Mr. Matacotta,

Herewith we confirm that manufacture and geometry of the European sampling inlet "TESTA DI PRELIEVO PM2.5 2.3mcubi/h" is in accordance to the specifications laid down in the standard EN 14907:2005 Point 5.1.2.2.

Thus your European sampling inlet "TESTA DI PRELIEVO PM2.5 2.3mcubi/h " has to be considered as equivalent in manufacture and geometry to the standard LVS inlet design according to the standard EN 14907:2005 Point 5.1.2.2.

Yours Sincerely

Head of Division — Environmental Protection

ppa. — i. A.

Dr. rer. nat. Peter Wilbring — Dipl.-Ing. Karsten Pletscher

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Geschäftsführung
Eckhard Lippold

Amtsgericht Köln HRB 56171

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Cologne, 10 May 2012

Certification of the European sampling inlet "TESTA DI PRELIEVO PM10 2.3mcubi/h" according to the standard EN 12341:1998

Dear Mr. Matacotta,

Herewith we confirm that manufacture and geometry of the European sampling inlet "TESTA DI PRELIEVO PM10 2.3mcubi/h" is in accordance to the specifications laid down in the standard EN 12341:1998 Annex B1.

Thus your European sampling inlet "TESTA DI PRELIEVO PM10 2.3mcubi/h " has to be considered as equivalent in manufacture and geometry to the standard LVS inlet design according to the standard EN 12341:1998 Annex B1.

Yours Sincerely

Head of Division — Environmental Protection

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Amtsgericht Köln HRB 56171

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