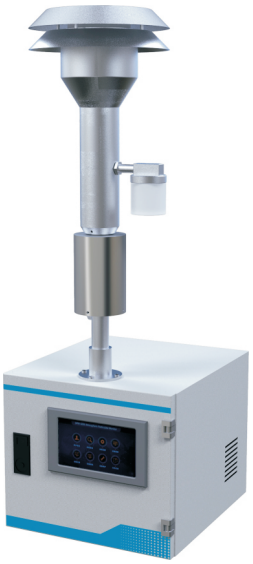
ZETIAN
Process & Environmental

DPM–6000
Particulate Matter Monitor
—— Beta Ray Attenuation Method



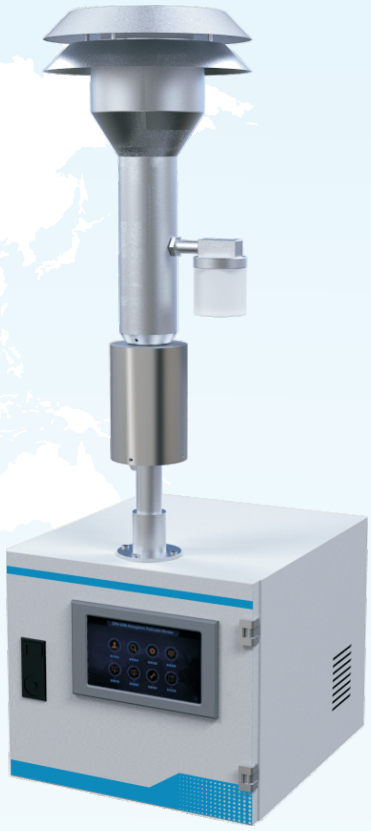
Environment Online Monitoring/Industrial Process Control/Safety Monitoring



Focusing on
Environmental & Industrial Analysis

Hangzhou Zetian Technology Co.,Ltd.

Overview



Inhalable particle content is one of the most important indexes for measuring air quality. Combining years of experience in developing environment and safety monitoring instrument as well as the latest demand at home and abroad, our company has launched a new generation DPM-6000 atmospheric particulate monitor with high accuracy, reliability, stability and economy. It can measure PM10, PM2.5 and dust particles of other cut size, widely applied in inhalable particles concentration detection in environmental atmosphere monitoring.

- Design of instrument meets US EPA and national standard
- Adopt PM filter membrane enrichment technology
- Particle cutter meets EPA standard
- TSP, PM10, PM2.5
- Use simple, reliable mechanical transmission structure and modular design to ensure measurement is accurate and reliable, and the instrument can operate stably for a long term.

Principle introduction

The monitoring principle of analyzer is mainly based on enrichment technology of atmospheric particulate and beta ray attenuation method. The instrument concentrates particulate matters whose aerodynamic equivalent diameter is smaller than 2.5/10μm on rolled filter membrane. The instrument adopts low-radiation ^{14}C as radioactive source. The emitted β-ray passes through filter membrane with contaminants and will be received by detector. The detector is composed by photo-multiplier tube (or Geiger detector), plastic scintillator and counter. The thickness of enrichment can be analyzed quantificationally according to β -ray energy that detector received, then the PM2.5/10 concentration in the air can be calculated.

Specification

Measurement Principle		Beta ray attenuation method
Performance Index	Measuring Range	0~1000μg/m^3 or 0~10000μg/m^3 (optional)
	Radioactive Source	^{14}C (carbon-14), radioactivity ≤60μCi
	Accuracy	≤5%
	Display Resolution	1μg/m^3
	Lower Detection Limit	5μg/m^3
	Flow Error	≤ ±2% (generally set at 16.67L/min)
	Sampling Flow Stability	≤ ±2% working point flow/24h
	Sampling Period	≤1h (time is settable)
	Sampling Flow	Default 16.67L/min
	Parallelism	PM10≤10%，PM2.5≤15%
Filter Paper Tape	Filter Paper Tape	Glass fibre, inner diameter:40mm,width: 30mm, service time 1 month (work period 1 h)
Interface Param	Communication Interface	RS232, RS485, 4-20mA, GPRS (optional)
	Data Storage	One year
Working Condition	Cutting	Ambient temperaure (-40~50)℃, ambient pressure (80~106)kPa
	Detector	Ambient temperature (5-40)℃, ambient pressure (80-106)kPa, humidity (≤90%)
Power Supply	AC (220 ± 22)V, (50 ± 1)Hz	
Dimension & Weight	483×407×322(mm) (L×W×H)	Monitor 30kg Pump 8kg

Function Feature

1. Design of gas path keeps filter paper, radioactive source and detector immovable during enrichment and measurement, ensuring good lower detection limit
2. US EPA standard beta ray attenuation method, which spares the complicated operations of TEOM, such as manually replace filter paper and weight. Compared to light scattering method, it has higher measurement accuracy
3. Cutter, based on simulation verification of aerodynamics, will provide various selection of accurate particle sizes: PM1, PM2.5, PM10, TSP
4. Sampling flow is measured by mass flow sensor and corrected with collected ambient temperature and pressure to get the sampling flow of the field condition
5. Use C^{14} source which is of low–density,low activity and long half–life to realize stable measurement. No special protection is needed. Reliable and safe. No radioactive contamination will be caused
6. Flexible paper–pressing structure. Mechanical driving design is simple and reliable; greatly reduce paper breaking and paper jam and avoid the error caused by the moving of filter paper
7. Pipeline heating system is used to eliminate interference from ambient humidity and make the detector fit into sudden change of the weather
8. Flow control system with precise closed loop feedback; stable sampling flow and small error
9. Various external ports, such as RS232/RS485, 4~20mA and etc.
10. Low maintenance frequency, once a year

Application


Urban living area


Agricultural production


Industrial construction


Coal storage area


Stockyard


Building construction


Road & street


Residential area

1. Inhalable particle real–time monitoring in industry,, construction, residential district and etc.
2. Environment assessment, permission and pollution forecast and pre–warning
3. Ambient air quality monitoring and mobile air monitoring experimental station
4. Occupational disease research , and long–term background environment research
5. Secondary emission monitoring (coal storage area, wharf, etc.)

Look forward to working with you

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