



KANOMAX
The Ultimate Measurements



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Aerosol Particle Mass Analyzer

Model APM-3600

This unique analyzer classifies aerosol particles by mass using a true “first-principle” measurement technique.



APM-3600 Analyzer and Control Unit

Methodology

This new and innovative measurement method classifies single aerosol particles based on their mass-to-charge ratio.

The APM utilizes two cylindrical electrodes rotating about a common axis at the same angular speed. Charged particles enter the annular gap rotating at the same speed as the electrodes. As a voltage is applied to the inner electrode, the particles experience directly opposing centrifugal and electrostatic forces. These forces are in balance for particles of a specific mass, allowing the particles to traverse through the APM.

Because the APM classifies particles based on their intrinsic mass, the technique is not dependent on particle size, shape factor, orientation, or properties of the surrounding gas.

Applications

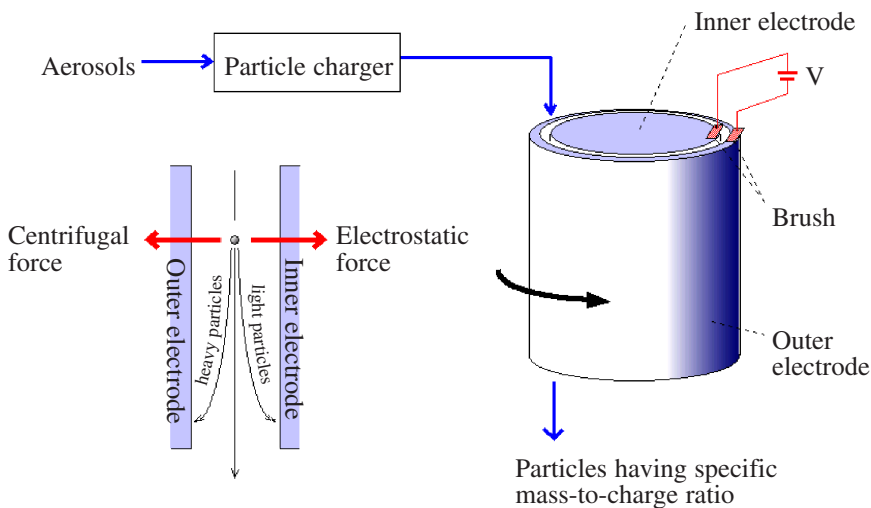
- Mass distribution measurements
- Particle density research
- Monodisperse aerosol generation

Specifications

| Product Name | Aerosol Particle Mass Analyzer |
|------------------------------|--|
| Model | APM-3600 |
| Classification Method | Based on the balance between centrifugal force and electrostatic force |
| Particle Mass Range | 0.01~100 femtogram (Equivalent to approx. 30nm~580nm for particle density of 1g/cm ³) |
| Classification Accuracy | Within ±10% of the center mass |
| Maximum Rotation Speed | Up to 9,500 rpm (with dry air) |
| Maximum Voltage | Up to -2,000V (with dry air) |
| Rotating Cylinder Dimensions | Inner cylinder diameter: 100mm, Outer cylinder diameter: 104mm Cylinder length: 250mm (Gap between cylinders: 2mm) |
| Sampling Flow Rate | 1 L/min. |
| Control Method | Panel or PC Control (Manual/Remote Switch) |
| Control Function | Number of rotations and applied voltage |
| Panel Display Function | Applied voltage / Number of rotations / Differential pressure between inlet and outlet (panel display) |
| Input / Output Function | Input: Settings of applied voltage and number of rotations Output: Applied voltage, number of rotations, and differential pressure between inlet and outlet |
| Dimensions / Weight | Main Unit: 550(W)×400(L)×900(H) mm / 125Kg Control Unit: 430(W)×350(L)×180(H) mm / 10Kg |
| Power Supply | AC115V/50/60Hz 15A |

Operating Principle of APM-3600

(excludes particle charge equipment)



APM Force Balance Equation

$$mr\omega^2 = q \frac{V}{r \ln(r_2/r_1)}$$

m = particle mass

ω = APM angular speed

r = particle location relative to axis of rotation

q = particle charge

r_1, r_2 = radii of inner & outer electrodes

V = applied voltage

CAUTION For safe and trouble-free operations, please read Operation Manual carefully before using the instrument.



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