PRODUCT

INFORMATION

Model 3375 Process Aerosol Monitor

The Model 3375 Process Aerosol Monitor (PAM) measures high-concentration, monodisperse aerosols such as those produced with TSI's Condensation Monodisperse Aerosol Generator (CMAG). Model 3375 is a new type of process instrument that monitors these aerosols on-line and measures particle size and concentration in real time. It measures the mean size of particles in the 0.5 to 10-micrometer range. The instrument comes calibrated for diethylhexyl sebacate (DEHS).

Monitors high-concentration, monodisperse aerosol

APPLICATIONS

Designed for on-line measurements, Model 3375 allows you to monitor aerosol produced by Sinclair-LaMer-type generators on a continuous basis. Due to the number of variable parameters, the precise adjustment of these generators can be quite complex.

The PAM, however, is a simple, robust, and compact device that connects directly to the generator outlet. It validates particle size, aerosol concentration, and confirms that the CMAG is operating properly. The PAM is also suitable for monitoring an aerosol during the process of adjusting CMAG operating parameters such as temperature, saturator flow, or screen flow. Additionally, the PAM can be used for general monitoring tasks involving a variety of high-concentration, monomodal aerosols.

OPERATION

Highly concentrated, monodisperse aerosol flows from the exhaust port of the aerosol generator to the PAM's inlet port. Inside the measuring volume, the intensity of the laser light on the photodetector is

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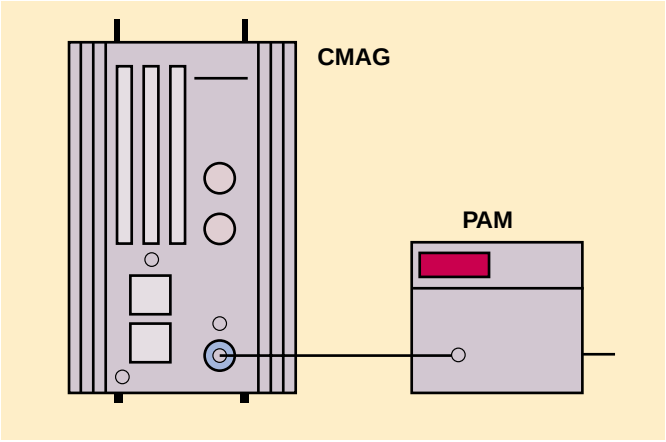
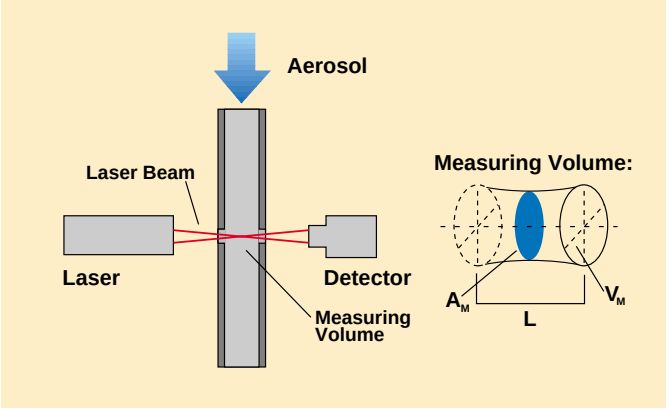
reduced depending on particle size and aerosol concentration. Size and concentration also affect the standard deviation measured by the photodetector.

Unlike conventional photometers, the PAM has a small, well-defined measuring volume. The average number of particles inside depends on the concentration of the aerosol and the size of the measuring volume. As described by the Poisson distribution, the number of particles N fluctuates with deviation $\sqrt{N}$. This fluctuation can be described by the standard deviation of the transmission. Therefore, measuring the average transmission and its standard deviation in the defined measuring volume determines both mean particle size and aerosol concentration. The measurement of the concentration is independent of the extinction coefficient.





3375 SPECIFICATIONS

Mode of operation: Extinction photometer with fluctuation analysis, concentration determined independent of extinction coefficient
Particle size range: 0.5 to 10 µm
Particle concentration range: $>10^4$ up to $10^7/cm^3$
Aerosol: Monodisperse, spherical particles (calibrated for DEHS)
Light source: Stable, 3-mW, 785-nm laser diode
Flow rates
Aerosol: 0.1 to 8 L/min
Sheath air: 0.2 L/min
Maximum counter-pressure: 3 kPa (0.03 atm)
Dimensions (LWH): 6 cm × 20 cm × 23.5 cm (2.4 in. × 7.9 in. × 9.3 in.)
Weight: 2.4 kg (5.3 lb)
Power requirements: Operates on 12.0 VDC, supplied by power supply (included)
Power supply: 115/230 VAC

Specifications are subject to change without notice.

BIBLIOGRAPHY

Altmann J, A Rudolph, and B Wessely, Particle Sizing of Highly Concentrated Monodisperse Aerosols, *J. Aerosol Sci.*, 25(suppl. 1): 523-524 (1994).

Gregory J, Turbidity Fluctuations in Flowing Suspensions, *J. Colloid and Interface Sci.* 105(2): 357 (1985).

TO ORDER

Specify	*Description*
3375	Process Aerosol Monitor

Model 3375 is produced in Germany by TOPAS GmbH and marketed by TSI Incorporated. Contact your TSI representative for additional information.

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