

AccuSizer® A9000 FX NANO SIS and AD Particle Count/ Size Analyzer

Dual sensor particle counter and size analyzer for extended dynamic range down to 150 nm

The AccuSizer® A9000 FX Nano is a unique liquid particle counter with the widest dynamic range and a variety of sampler fluids. The combination of FX Nano and LE 400 sensors provides a dynamic range from 0.15 – 150 μm (depending on configuration). The A9000 SIS syringe sampler is designed for low concentration samples not requiring dilution. The A9000 AD system automatically dilutes the sample below the coincidence limit before initiating the measurement. Both systems employ dual pulse height analyzer counters and research software.

A9000 SIS with Counter, Figure 1

The SIS syringe injection system is designed for low concentration, no dilution samples. Sample volumes as low as 150 μL can be analyzed and conserved for other measurements. Mixing before analysis can occur by a stir bar or sample push/pull prior to analysis. This is an ideal system for lower concentration protein aggregation studies.

A9000 AD, Figures 2 and 3

The AD system utilizes exponential autodilution to dilute high concentration samples below the coincidence limit before analysis. The sample can be introduced to the system three different ways:

- Pumped from a sample bottle into the injection loop, Figure 2
- Injected through the manifold into the injection loop, Figure 3
- Injected directly into the dilution vessel, Figure 3

This is an ideal system for CMP slurries, filter testing, and high concentration protein aggregation studies.



Figure 1. A9000 SIS system

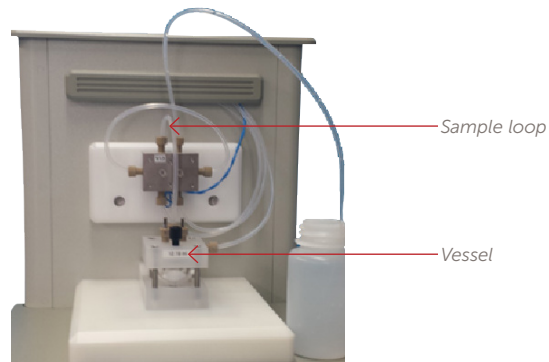


Figure 2. Sample pumped into loop

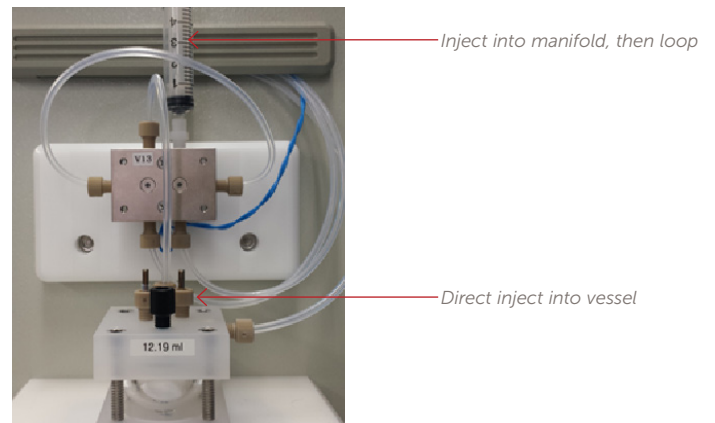


Figure 3. Sample injection options

Sensors

The LE400 combines light obscuration + scattering for a total dynamic range of 0.5 – 400 μm at concentrations up to ~9,000 particles/mL when used alone.

The FX Nano uses a focused laser beam to measure down to 150 nm at concentrations up to $\sim 10^6$ particles/mL. A proprietary algorithm is used to deconvolve pulse height vectors into the particle size distribution.

When operating in dual sensor mode, the dynamic range is 0.15 – 150 μm .

SPECIFICATION*

A9000 SIS	Includes two sensors, counter, syringe injection sampler with magnetic stirrer. Syringe volumes of 2.5, 5, or 10 mL. Operation mode: syringe pulls sample through sensor three times for three measurement ranges; FX Nano high gain, FX Nano low gain, LE400. These three ranges are then combined for the final result.
A9000 AD	Includes two sensors, counter, automatic dilution sampler. Vessel volume ~12 mL. Loop volumes 0.2, 0.3, 0.5, 1 mL. Operation mode: sample loop filled, then first dilution step = vessel volume/loop volume. Next the sample undergoes exponential dilution until concentration falls below the coincidence level. The sample is measured in three ranges; FX Nano high gain, FX Nano low gain, LE400. These three ranges are then combined for the final result.
LE400	LE400-05; 0.5 – 400 μm when used alone, light extinction and scattering, summation calibration, particle sensitivity to 10 PPT, concentration limit ~10,000 particles/mL, size accuracy 5%, count accuracy 10%, recommended flow rate = 15 mL/min, but can be calibrated at other flow rates depending on configuration.
FX Nano sensor	Concentration limit: $\sim 10^6$ particles/mL Range: 0.15 – 10^+ μm
Counter	Dual pulse height analyzer to accommodate both LE400 and FX Nano sensors. Up to 1024 size channels.
Software	Research software, not 21 CFR part 11 compliant
Power	100-120 VAC, 60 Hz or 220-240 VAC, 50 Hz

*Specifications sample dependent and subject to change without notice.

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EXAMPLE RESULTS



Figure 4. IgG protein, filtered vs. unfiltered

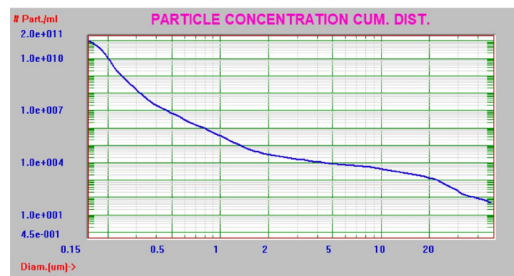


Figure 5. CMP slurry

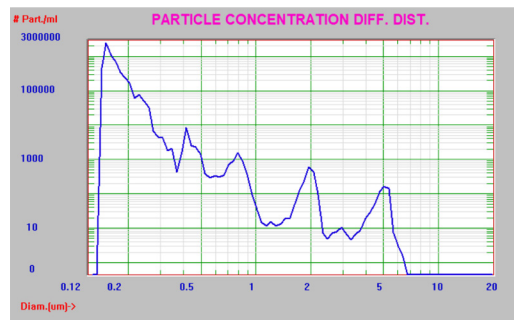


Figure 6. Multi-modal PSL standard, y-axis log population



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