



Affordable, battery-powered nanoparticle sizer. Ideal for portable applications or multi-point sampling.

Features and Benefits

- Size distributions down to 10 nanometers
- Two measurement modes:
 - SCAN: real-time size distributions
 - SINGLE: single size concentration monitoring
- 1 minute size distributions; 1 second single size data
- Simple, stand-alone operation
- Built-in data logging
- Small and portable
- ~6 hour battery life, with hot swappable rechargeable batteries
- Concentrations up to 1,000,000 particles/cm³
- NanoScan Manager software package
- No radioactive materials

NanoScan SMPS Nanoparticle Sizer Model 3910

The TSI NanoScan SMPS Model 3910 opens the door to routine nanoparticle size measurements. This revolutionary sizer utilizes scanning mobility particle sizing technology in a portable instrument that is about the size of a basketball. Easy to use, lightweight and battery-powered, NanoScan SMPS enables investigators to collect valuable nanoparticle size data from more sites. Derived from core TSI technologies, the NanoScan SMPS is an innovative, cost effective solution for real-time nanoparticle size measurements.

Applications

The NanoScan SMPS is suitable for a variety of applications, including:

- General applied research
- Indoor/outdoor air quality investigations
- Nanotechnology/nanoparticle applications
- Combustion/emission research
- Mobile studies
- Health effects/inhalation toxicology
- Occupational hygiene/workplace exposure monitoring
- Point source identification





Nanoparticle Size Distributions

Nanotechnology is an active area of scientific research due to the wide variety of potential applications. However, nanoparticle emissions, generated from a wide variety of common sources, are considered a potential indoor/outdoor air quality hazard. To date, the cost and size of nanoparticle sizing instruments have prohibited many users from investigating nanoparticles and nanoparticle exposure. TSI's NanoScan SMPS provides investigators the opportunity to move into the field of nanoparticle exposure measurement and nanotechnology.

Portability

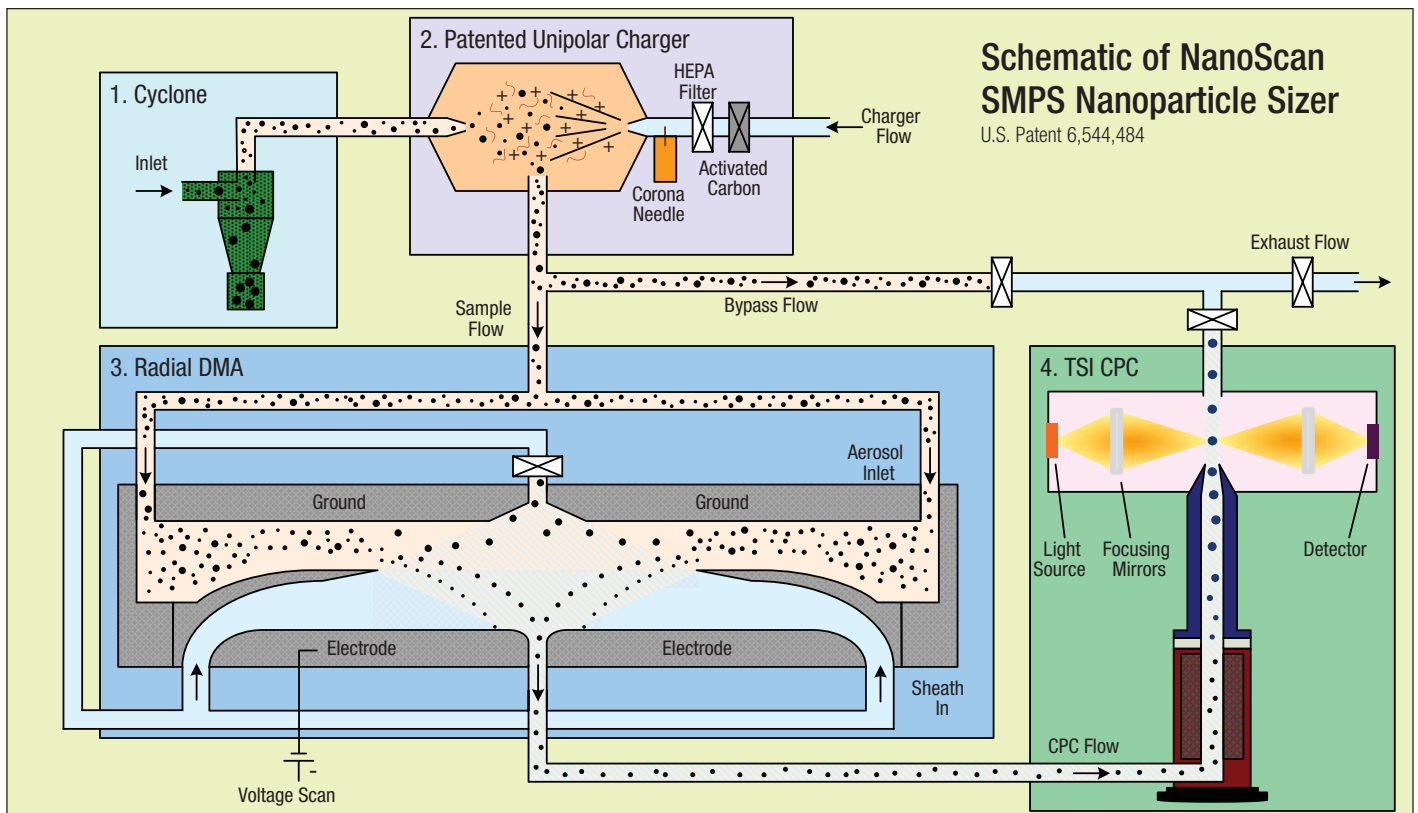
Move your measurements out of the lab. Small, lightweight and battery powered, the NanoScan SMPS is ideal for applications that demand portability like on-road measurements, work place surveys, field studies, and point source identification. This cost effective instrument also opens up the possibility of simultaneous temporal and spatial measurements with multiple units. Expand the number of places that you make nano-measurements.

A Sophisticated Instrument In a Simple Package

The NanoScan SMPS combines sophisticated technology and ease of use into a practical measurement tool.

Four key design components:

- 1. Pre-conditioner:** A cyclone is used to remove larger particles
- 2. Particle Charger:** A patented unipolar charger charges more nanoparticles than bipolar chargers, and eliminates the need for radioactive material.
- 3. Size Selector:** A Radial DMA (RDMA) is used for size resolution and accuracy and helps keep the instrument compact and lightweight.
- 4. Particle Counter:** An isopropyl-based CPC provides accurate measurements at high and low concentrations using a working fluid acceptable in workplace environments. The instrument can be operated off of a rechargeable wick with a ~6 hour life, or for longer measurements, an external liquid reservoir can be used.

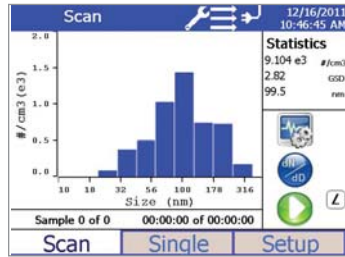


Easy Acquisition of Valuable Data

Data collection begins at the touch of the instrument display. No need for a dedicated computer to setup the instrument or save data. The user interface is intuitive and easy for new users to operate.

NanoScan SMPS displays real-time number, surface area or mass size distributions,

concentrations and statistics. From the front panel users can program start times, number of samples and other parameters. A full suite of instrument diagnostics data can be viewed from the Setup Screen.



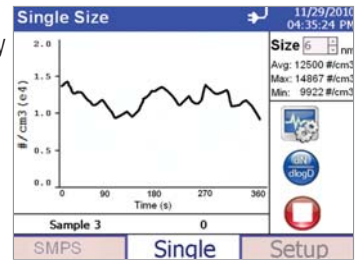
Screen shot of NanoScan SMPS during nanoparticle size distribution measurement

Streamline Data Analysis with NanoScan Manager Software

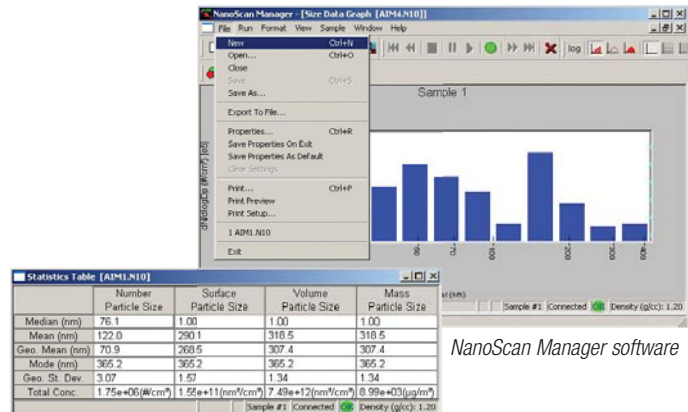
Generate presentation ready graphs and tables in minutes with this easy to use, menu driven software package. Data can be quickly weighted by number, surface area and mass. Full statistical suites are calculated on every data set. A handy playback feature allows visual review of collected data. Users can focus the display window on the area of interest to provide greater detail. Peak size and concentration can easily be pinpointed by selecting a data hot spot on the graph. TSI's NanoScan Manager Software is Microsoft® Windows® 7 64-bit compatible and can be used to control instrument operation and for data collection.

Single Size Monitoring

In addition to nanoparticle size distributions, the NanoScan SMPS can be used to collect second by second concentration data at a single mobility diameter. If the nanoparticle source of concern generates 50 nm particles, you can easily monitor 50 nm mobility diameter with 1 second time resolution to keep a real-time record of concentration levels.

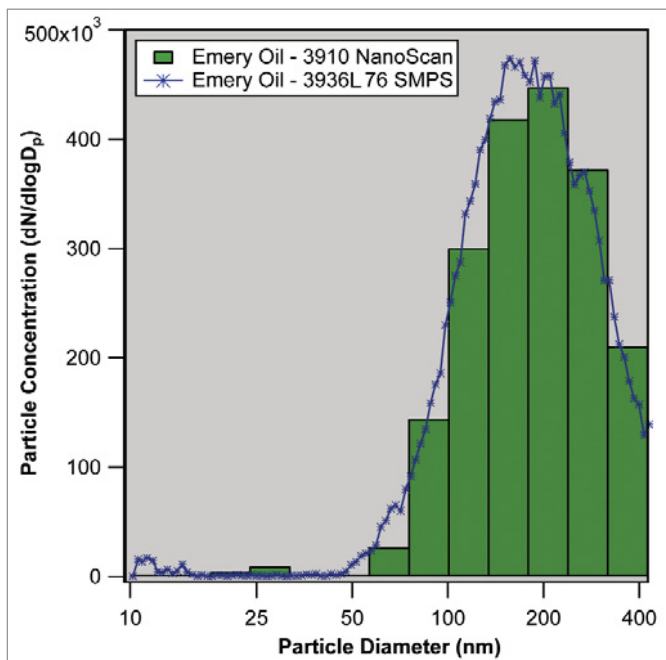


Screenshot NanoScan SMPS during single size monitoring

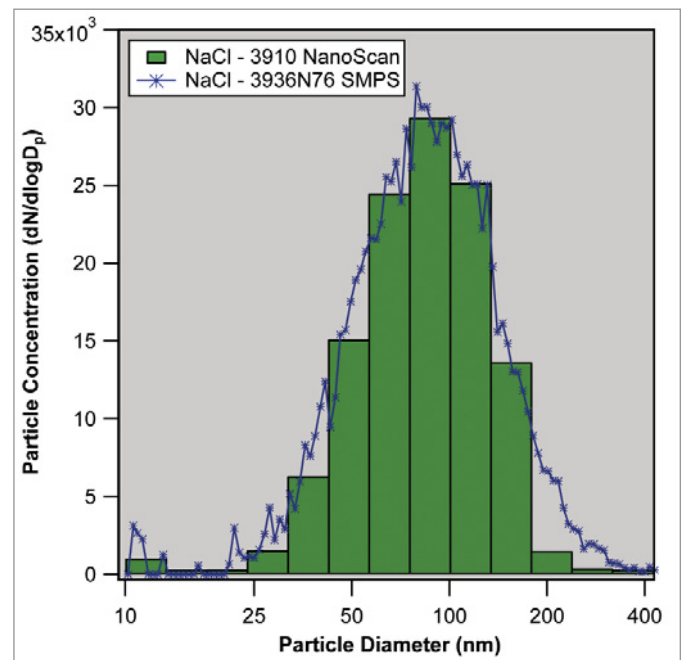


NanoScan Manager software

Comparison to a TSI SMPS™ Spectrometer



Atomized NaCl aerosol measured using NanoScan SMPS and Model 3936 SMPS™ Spectrometer



Atomized Emery Oil aerosol measured using NanoScan SMPS and Model 3936 SMPS™ Spectrometer

Specifications

NanoScan SMPS Model 3910

Operating Features

| | |
|----------------------------------|--|
| Measurement Modes | SCAN – size distributions SINGLE – single size concentration monitoring |
| Size Range | 10 to 420 nm |
| Size Channels | 13 |
| Measurement Time | Size distributions: 60 s (45 s upscan, 15 s downscan) Single size mode: 1 s |
| Particle Concentration | <1,000,000 particles/cm ³ |
| Flow Rate | 0.8 ±5% inlet ; 0.25 ±5% sample |
| Condensing Liquid | Reagent grade (99.5% or better); isopropyl alcohol |
| Fill System | Wick only (~6 hrs operation); Optional external bottle |
| Zero Count | ≤0.01 particles/cm ³ |
| Data Storage Option | 3-8 days on-board memory; USB storage drive option |
| Display | Color touchscreen |
| Communications | USB |
| Warm-up Time | <15 minutes |
| Vacuum Source | Internal |
| Dimensions (LWH) | 45 cm x 23 cm x 39 cm |
| Weight | <8kg (<17.5 lbs); without batteries; <9kg (<19.5 lbs); with 2 batteries |
| Power | 100 to 240 VAC, 50/60 Hz; AC Adaptor or batter power |
| Env. Operating Conditions | 10-35°C; 10-80°RH |
| Software | NanoScan Manager Software |
| Battery Performance | 2 batteries ~6 hrs; hot swappable, rechargeable |
| Compliance | CE, CSA and ROHS |
| Calibration | Recommended annually |

Specifications reflect typical performance and are subject to change without notice. TSI, the TSI logo, Scanning Mobility Particle Sizer and SMPS are trademarks of TSI Incorporated.

TSI Quality and Support

TSI strives to meet or exceed our customers' needs and expectations through continual improvement of our processes, products and services. Our Quality System is registered to ISO 9001:2008 and TSI uses NIST traceable analytical tools and NIST traceable standard reference materials to check out and calibrate instruments. Each instrument that leaves the factory is built for longevity, backed by TSI's commitment to quality, and supported by our worldwide network of committed TSI professionals.



Measure Size Over 3 Orders of Magnitude

When the Model 3910 NanoScan SMPS is used with the Model 3330 Optical Particle Sizer, three orders of size magnitude can be measured, collecting real-time data. A portable, affordable option to measure from 10 nanometers to 10 microns.



NanoScan SMPS
Model 3910



Optical Particle Sizer
Model 3330

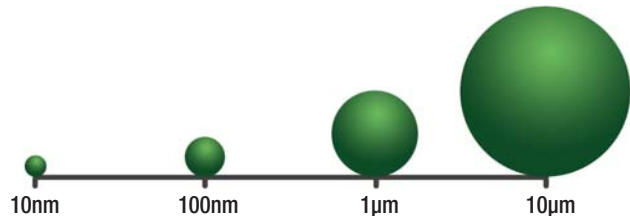


Illustration: Using 10 µm reference: 1 µm particle is 5x smaller than shown; 100 nm particle is 25x smaller than shown; 10 nm particle is 125x smaller than shown

To Order

NanoScan SMPS

| Specify | Description |
|---------|---|
| 3910 | NanoScan SMPS Nanoparticle Sizer with NanoScan Manager Software |

Accessories

| Specify | Description |
|---------|-----------------|
| 3062 | Diffusion Drier |

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