



Knowledge Beyond Measure.

# Nano LPM™ System

Model NANO-LPM10



## Empowers Data-Driven Decisions in Ultrapure Water Monitoring

The TSI Nano LPM™ System is engineered to close the critical metrology gap in ultrapure water (UPW) monitoring. It provides confident detection of both suspended nanoparticles and dissolved content down to 10 nm, delivering the linear, matching, and repeatable performance required for modern semiconductor fabs. The TSI Nano LPM™ System empowers process engineers and quality managers to make proactive, data-driven decisions that reduce downtime, optimize maintenance, and protect yield.

TSI Nano LPM System includes a specialized generator that aerosolizes UPW, paired with a cleanroom-ready, water-based condensation particle counter (CPC) that enables accurate and dependable measurements.

### Features and Benefits

- Enable Data-Driven Decisions: Real-time, continuous monitoring enables proactive responses to process changes and excursions before they impact yield.
- Optimize Maintenance: Confidently monitor rinse-down after filter and resin replacement to bring systems back online faster.
- Pinpoint Contamination: Distinguish small but significant differences in water quality across polish stages to identify sources of contamination.
- Validate System Improvements: Quantify the reduction in contamination after UPW system upgrades with clear, defensible data.
- Reliable Performance: Delivers linear, matching, and repeatable performance.
- In-Situ Performance Verification: Integrated injection port to enables onsite verification, system validation, and particle challenges.
- Close the Metrology Gap: Provides confident detection of UPW contamination  $\geq 10$  nm, addressing the limitations of legacy liquid particle counters as noted in SEMI F63.

### Applications

- Continuous, online monitoring of UPW main supply and at points-of-use.
- Detection of particle excursions and breakthrough events.
- Baseline trending and analysis for process control.
- Evaluation of filter and resin efficiencies to optimize preventative maintenance schedules.
- Quantification of UPW quality improvements after system upgrades.
- Parts cleanliness – verify sensitive components meet specifications before integrating into critical tools.



## Specifications

# Nano LPM™ System

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### Size Range

10 nm – 250 nm

### Particle Channel Sizes

Single channel

### CPC Counting Efficiency

50% at 10 nm

### CPC Concentration Limit

10<sup>9</sup> counts per mL

### Total Water Consumption

Line Pressure Dependent, 150-300 mL/min

### Inspected Water Sample Flow Rate

10 mL/hr

### Sample Frequency

Continuous sampling, minimum 1-minute sample - user selectable averaging intervals. Live trend graphing

### Gas Feed to Generator

70 – 125 psi (N<sub>2</sub> or CDA)

### Sample Water Temperature Range

15 – 50 °C

### Sample Water Pressure

40 – 72.5 psi (on line sampling)

### Generator Wetted Surface Materials

PFA, Teflon™, Stainless Steel, PEEK

### Generator Inlet and Outlet Fittings

Water in/out 0.25 in. Flaretek® (2), Gas in 0.25 in. Swagelok®

### CPC Working Fluid

Ultrapure or deionized water. Direct connect

### CPC Aerosol Flow Rate

0.1 CFM (2.83 L/min)

### CPC Sample Output/Exhaust

Internal HEPA filter (>99.997 % at 0.3 µm)

### Communication, Data Transfer and Storage

10.5 in. Windows™ tablet computer preloaded with Nano LPM™ Software, controls all system components, acquires, logs, exports and displays data. > 6 months of continuous data storage. Provides Modbus server for external communications

### Power AC Adaptor

CPC: 100 to 240 VAC universal power supply. Mains supply voltage fluctuations not exceeding +/- 10% of rated voltage, DC power requirement to instrument: 12 VDC @ 16.0 amps.

Particle Generator: 100 to 240 VAC universal power supply

### Operating Environment

Temperature: 15 – 30 °C, Humidity: 10 – 90% non-condensing, Maximum Altitude: 2000 m, indoor use

### Dimensions (H x W x D)

CPC (without water bottle):

22.4 in. x 9.3 in. x 8.6 in. (56.9 cm x 24.6 cm x 21.8 cm)

Particle Generator:

21.0 in. x 11.1 in. x 22.5 in. (53.3 cm x 28.2 cm x 57.2 cm)

### Weight

CPC: 28.5 lbs. (13.0 kg),

Particle Generator: 64.4 lbs. (29.2 kg)

### Included Accessories

Manuals are available on tsi.com, power supply, alarm connector, purge filter, CPC barbed inlet and a .19 in. OD straight tube connector inlet, water bottles, brackets for water bottles USB cable, (2) Ethernet cables, Water Regulator, PFA Tubing 0.25 in. OD, CPC drain line, communications hub.

### Patents

Visit [tsi.com/patents](http://tsi.com/patents)



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