



® Knowledge Beyond Measure.

# Water-Based Wide-Range Scanning Mobility Particle Sizer™ (SMPS™) for Ambient Air Monitoring

Model 3938W89



## Ultrafine particle monitoring you can count on for years

This particle sizer enables air quality monitoring of ultrafine particles (UFPs) over a wide range of sizes while also using water as a Condensation Particle Counter (CPC) working fluid. The data provided by the Scanning Mobility Particle Sizer™ (SMPS™) can be easily integrated into monitoring networks. A complete solution for monitoring ultrafine particles is available when this SMPS™ system is combined with the sampling system, the humidity sensor, and a software extension specifically designed for ambient monitoring.

### Applications

Designed for continuous air quality monitoring. Thanks to its exchangeable components it can also be adapted to support other support other research goals:

- Air quality monitoring of ultrafine particles
- Environmental chamber studies
- Indoor air quality studies
- Health effect studies
- Basic aerosol research

### Features and Benefits

- Extended particle size range from 10 to 800 nm in a single scan
- New Wide-Range Differential Mobility Analyzer 3083 is based on TROPOS Vienna-type DMA
- Uses distilled water as a CPC working fluid: safe and easily available
- Scan time down to 1 minute: capture dynamic aerosol size distributions (for example, near airports)
- Capable of providing a common log of particle data, relative humidity and temperature when used with the Aerosol Humidity and Temperature Sensor RHT3000



## Specifications

# Water-Based Wide-Range SMPS™ for Ambient Air Monitoring

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### SMPS™ Settings and Requirements

Aerosol Flow Rate	0.6 or 1.5 L/min
Sheath Flow Rate	2 to 15 L/min, user-selectable
Recommended Minimum Sheath: Aerosol Ratio	5 : 1
Particle Size Range	10 to 800 nm
Measurement Time	1 to 10 minutes, user-selectable
Working Fluid for CPC	distilled water

Particle concentration range: up to 10<sup>7</sup> particles/cm<sup>3</sup>.

Particle resolution: Measured at 128 channels/decade. Ability to adjust resolution to 64, 32, 16, 8 or 4 channels per decade for display and data export. Number of total size channels varies by configuration and settings.

At standard settings (64 channels/decade, 10 to 800 nm scan range, 5 : 1 sheath : aerosol ratio), scan includes 122 channels.

DMA voltage: Standard configuration is negative high voltage on DMA center electrode. An Electrostatic Classifier 308202 is optionally available for dual polarity. For a classifier containing only positive polarity, please contact TSI®.

### Ambient Operating Conditions

Temperature	10 to 35°C
Pressure	75 to 105 kPa
Humidity	0 to 90%, non-condensing
	Temperature and pressure affect the available particle size range.

### Data Acquisition

Continuous with PC-based software. The optional monitoring module allows automatic export of multiple data sets (raw and final concentrations), auto-recovery after power outage, and correction of data for particle losses occurring within the sampling system.

### Aerosol Neutralizer Options - Ordered Separately

3077A	370 MBq (10 mCi), Kr-85, Half-life of 10.8-year
3088	Soft X-ray <9.5 keV ~8,760 operating hours
6005931	Lead shielding column for 3077/3077A placed inside 3082 classifier

### Accessories

3750200	Sampling System for Atmospheric Aerosol
RHT3000	Aerosol Humidity & Temperature Sensor
AIM11SMPSMONTRIAL	SMPS™ Monitoring Software Trial: permits current TSI® customers already using AIM 11 to temporarily access Monitoring-specific software features
AIMSMPSMONITOR	SMPS™ Monitoring Software

### Communication & User Interfaces

Ethernet to communicate with monitoring software: 8-wire RJ-45 jack, 10/100 BASE-T, TCP/IP). Configurable for automated (DHCP) or manual network settings.

RS-232 connecting CPC to Classifier

Embedded touch display for local diagnostics

### Power Requirements

3789	200 W
3082	200 W

### Dimensions (H x W x D/Weight)

3082	40 × 28 × 40 cm / 14.2 kg
3083	47 × 13.2 × 15.9 cm / 8.5 kg
3789	30.7 × 18.3 × 40.4 cm / 8.2 kg*
Assembled 3938W89 SMPS system	70.7 × 40.5 × 40.4 cm / 30.9 kg**

\* Without the fill and drain bottles attached

\*\* These dimensions apply to a setup where the 3789 is located atop the Electrostatic Classifier 3082.

Refer to separate product sheets for descriptions and specifications of individual components.

### To Order

Specify	Description
3938W89	SMPS™ for Ultrafine Particle Monitoring; Water-Based CPC
3077A	370 MBq (10 mCi), Kr-85, Half-life of 10.8-year
3088	Soft X-ray <9.5 keV ~8,760 operating hours
6005931	Lead shielding column for 3077/3077A; placed inside 3082 classifier
3750200	Sampling System for Atmospheric Particles
RHT3000	Aerosol Humidity and Temperature Sensor
AIM11SMPSMONITOR	Aerosol Instrument Manager SMPS software, monitoring version
3789-MKIT	Maintenance Kit for WCPC
3789-WKIT	Wick Replacement Kit for WCPC



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