Knowledge Beyond Measure.

Condensation Particle Counter

Model 3750-10

Ensures precise monitoring of ultrafine particles (UFPs), meeting the highest standards of accuracy and reliability

The CPC 3750-10 is the result of decades of innovation in TSI® full-flow CPC technology, recognized as the benchmark for nanoparticle counting. This latest version offers enhancements that expand the concentration range and optimize ease of use with an intuitive direct-touch user interface, updated software and secure internal data storage that can store data for months.

With a D50 of 10 nm, the 3750-10 is suitable for a wide variety of nanoparticle measurements, including continuous monitoring of ultrafine particles according to EN 16976:2024*. Operating in a single flow mode at 1 L/min, it streamlines your operation for enhanced efficiency.

The CPC 3750-10 provides operational versatility, offering the option to use it with or without software. When used independently, data is stored directly on the CPC for convenient access in the future.

In addition, the CPC 3750-10 plays a central role in the widely used configuration of the Scanning Mobility Particle Sizer™ (SMPS™), alongside TSI's wide-range DMA 3083. This tried and tested configuration has proven itself in a wide range of measurement applications.

Essentially, the CPC 3750-10 extends the concentration range, ensures optimal counting statistics and integrates seamlessly with SMPS™ technology. Trust the reliability and precision that TSI® instruments have provided for years.

*Compliance to EN 16976 (formerly known as CEN/TS 16976) requires verification and calibration by the World Calibration Centre for Aerosol Physics (WCCAP), Leibniz Institute for Tropospheric Research (TROPOS).

Features and Benefits

- Detection efficiency at low particle size:
  - D50 = 10 nm ± 1.0 nm
  - D90 < 20 nm
- Extended concentration range up to 100,000 particles/cm³ without dilution (for dilution, see 'Accessories')
- Data rate up to 50 Hz - capture highly dynamic processes
- Integrate data directly into a network, or export from software (auto-export available)
- Water-removal system - compatible with high-humidity environments
- Improved diagnostics with Pulse Height Monitoring
- Fast response to rapid changes in aerosol concentration (T10-90 < 1 sec)
- Automatically shuts off of flow when inlet is blocked

Applications

- Air quality monitoring for particle number concentration (EN 16976:2024*)
- Atmospheric monitoring for particle size distribution (CEN/TS 17434, if part of 3938W50-CEN10)
- Health effect studies
- Basic aerosol research
- Combustion

Specifications

Condensation Particle Counter

Model 3750-10

Particle Size Range

10 nm minimum detectable particle size (D50), verified with monodisperse sucrose particles

Efficiency of 90% at Dp < 20 nm

> 3 um max. detectable particle size

Particle Concentration Range

Up to 100,000 ($1x10^5$) particles/cm³

Single particle counting mode with continuous live-time coincidence correction

Particle Concentration Accuracy

±5% at <100,000 particles/cm³

False Background Counts

<0.001 particles/cm³ based on 12-hour average

Response Time

(Response time is described as a percentage of a concentration step change)

< 1 second for 90% to 10% (T10-90, T90-10)

~2 seconds for 0 to 95% (T95)

Flow System

1.0 ± 0.05 L/min inlet and counting flow (volumetric)

Requires external vacuum source capable of 60 kPa (18 in Hg) minimum gauge (below atmospheric pressure); Pump model 3032-EC, listed under 'Accessories', meets this requirement

Liquid System

Butanol (n-Butyl alcohol, not included) used as working fluid

Internal water removal pump to remove condensate; beneficial in humid environments.

Data Storage

Internal memory lasts for ~ 1 year of data at 50 Hz data rate

Communication Interfaces

Ethernet port for remote connection: 8-wire RJ-45 jack, 10/100 BASE-T, TCP/IP).

Configurable for automated (DHCP) or manual network settings.

USB type C to connect CPC directly to computer (cable included)

USB type B for external memory drives; a Wifi adapter can be used

Pulse output: BNC connector, TTL level pulse, nominally 350 ns wide

Embedded touch-display

Ambient Operating Conditions

Temperature	10 to 35°C (50 to 95°F)
Humidity	0 to 90% RH, non-condensing
Pressure	75 to 105 kPa (0.75 to 1.05 atm)

Electrical

100 to 240 VAC, 50/60 Hz, 200 W maximum

Accessories

3750200	Sampling System for Atmospheric Particles
3333-10	Aerosol Diluter
RHT3000	Relative Humidity and Temperature Sensor
375X-2LBOTTLE	2 L fill bottle
AIM11CPCMONTRIAL	CPC Monitoring Software Trial: permits current TSI customers already using AIM 11 to temporarily access monitoring-specific software features
AIMCPCMONITORING	Aerosol Instrument Manager (monitoring license)

Dimensions (H x W x D)

27.5 cm x 18.3 cm x 29.9 cm (10.83 in. x 7.21 in. x 11.76 in.), not including fill bottle and bracket

Weight

~6.6 kg (~14.6 lbs)

To Order

Specify	Description
3750-10	Condensation Particle Counter, D50 = 10 nm
3750-MKIT	Maintenance kit for CPC
3750-WKIT	Wick replacement kit for CPC
3032	Vacuum pump 110 V (US)
3032-EC	Vacuum pump 230 V (EU)
3032-1	Vacuum pump 230 V (UK)

Specifications are subject to change without notice.

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