Knowledge Beyond Measure.

Condensation Particle Counter

Model 3750-CEN

For ultrafine particle monitoring compliant to CEN/TS 16976:2016

Air quality monitoring of particle number concentrations made easy with a Condensation Particle Counter (CPC). Built on decades of experience with particle counting technologies, the CPC 3750-CEN is made for 24/7/365 operation. When complemented with accessories for sampling, temperature and humidity measurement, the resulting system is the cornerstone of your ambient air monitoring station. For hot-spots of ultrafine particles with high concentrations, a diluter is available.

Features and Benefits

- Compliant with CEN/TS 16976:2016, the model 3750-CEN automatically includes a calibration performed by a facility of the European Center for Aerosol Calibration and Characterization (ECAC), as an independent reference. If desired, the same instrument can be purchased without this calibration included (model 3750), and the calibration obtained separately
- Integrate the data into your network directly or export from the software
- Maximum uptime with auto-recovery from power failure and detailed diagnostics such as monitoring the count pulse height
- Full-flow CPC design provides optimal counting statistics
- Minimal maintenance and world-class application support
- Extended concentration range up to 100,000 particles/cm³ without dilution (for dilution, see 'Accessories')
- Can be calibrated to have one of two different detection efficiencies:
  - 3750-CEN7: D50 = 7 nm +/- 0,7 nm; D90 < 14 nm [2016 revision of standard]
  - 3750-CEN10: D50 = 10 nm [upcoming revision]

Applications

- Air quality monitoring for particle number concentration in compliance with CEN/TS 16976
- Atmospheric monitoring for particle size distribution in compliance with CEN/TS 17434: the 3750-CEN is also used in the Scanning Mobility Particle Sizer (SMPS™) for Ambient Air Monitoring 3938W50-CEN. This SMPS™ system is compliant with CEN/TS 17434 and monitors the size distribution of ambient ultrafine particles.

Accessories

- Sampling System for Atmospheric Particles 3750200 (incl. aerosol dryer)
- Aerosol Diluter 3333-10 provides a 10:1 (± 5%) dilution ratio
- Relative Humidity and Temperature Sensor RHT3000 provides measurements of those parameters to the CPC; data is stored alongside particle data

Specifications

Condensation Particle Counter

Model Series 3750-CEN

Particle Size Range

7 nm min. detectable particle size (D50),
verified with monodisperse silver particles at ECAC
Efficiency of 90% at D<14 nm
> 3 µm max. detectable particle size

Particle Concentration Range

Up to 100,000 ($1x10^5$) particles/cm^3 in single particle counting mode with continuous live-time coincidence correction

Particle Concentration Accuracy

±5% at <100,000 particles/cm^3

False Background Counts

Response time (described as percentage of 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 pump

Liquid System

Butanol (n-Butyl alcohol, not included) used as working fluid
Internal water removal pump to remove condensate; beneficial in humid environments. Always ensure that aerosol sample is dried in compliance with CEN requirements.

Data Storage

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

Communication Interfaces

Pulse output: BNC connector, TTL level pulse, nominally 350 ns wide
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
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
3032-EC	Vacuum pump (or other vacuum source capable of 60 kPa (18 in Hg) minimum gauge [below atmospheric pressure])
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 version)

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-CEN7	Condensation Particle Counter, D50 = 7 nm
3750-CEN10	Condensation Particle Counter, D50 = 10 nm
3032-EC	Vacuum pump 230 V (EU)
3032	Vacuum pump 110V
3750200	Sampling System for Atmospheric Particles
3333-10	Aerosol Diluter 10:1
RHT3000	Aerosol Humidity and Temperature Sensor
AIM11CPCMONITORING	Aerosol Instrument Manager CPC software, monitoring version
3750-MKIT	Maintenance kit for CPC
3750-WKIT	Wick replacement kit for CPC

Specifications are subject to change without notice.

Knowledge Beyond Measure.

TSI Incorporated - Visit our website **www.tsi.com** for more information.

USA	Tel: +1 800 874 2811	**India**	Tel: +91 80 67877200
UK	Tel: +44 149 4 459200	**China**	Tel: +86 10 8219 7688
France	Tel: +33 1 41 19 21 99	**Singapore**	Tel: +65 6595 6388
Germany	Tel: +49 241 523030		

P/N 5002773 Rev C

Printed in U.S.A.