



The ENVI-CPC 100 is a butanol-based particle counter with high efficiency for monitoring ultrafine particle (UFP) concentrations in the ambient air. The Model 100 is designed for typical concentrations of up to 10^5 particles/cm³. It is part of our modular nanoparticle measurement system. It can be combined with different systems for measuring the size distribution and concentration of UFP. The patented evaporator and condensation module is maintenance-free. This allows continuous operating times of up to one year without maintenance and cleaning.

The system meets the requirements of the current standard EN 16976:2024 (Harmonized measurement of number concentrations using CPC) in all areas. It can be operated directly with a NAFION[®] based sampling system if desired. The pumps required for this are already integrated.

工作原理

NANOPARTICLE COUNTER FOR AMBIENT AIR MONITORING WITH INTEGRABLE NAFION[®] AEROSOL DRYER

The aerosol pre-dried by the NAFION[®] dryer is fed directly to the evaporator unit by the internally adjustable and controlled diaphragm pump, which is saturated with the working liquid n-butanol.

The butanol flows in a spiral trough inside the cylinder to the base of the evaporator.

The non-evaporated residue is pumped back into the reservoir by a second pump. This actively ensures permanent saturation of the evaporator and simultaneously prevents deposits from forming on the inner walls. In contrast to a control with a critical nozzle, contamination of the system cannot lead to a drop in the volume flow. This is especially important for long-term measurements in the ambient air. The user can calibrate the volume flow.

The detection of the condensed particles is done by an optical sensor, which determines the concentrations and size distribution of the condensed particles and thus allows a simple and efficient quality control.

In addition to the usual factory calibration and adjustment of the cut-off according to EN 16976:2024, Palas offers certification of the instrument at the WCCAP (World Calibration Center for Aerosol Physics at the Leibniz Institute for Tropospheric Research).

The ENVI-CPC system has a 7" touch display for visualization and control. The system supports a standardized interface with different remote control and network application protocols, e.g., Modbus and Bayern-Hessen protocol. All necessary calculations and evaluations are performed directly on the device. A laptop for monitoring, changing settings, or visualization is not needed.

Comparison measurements

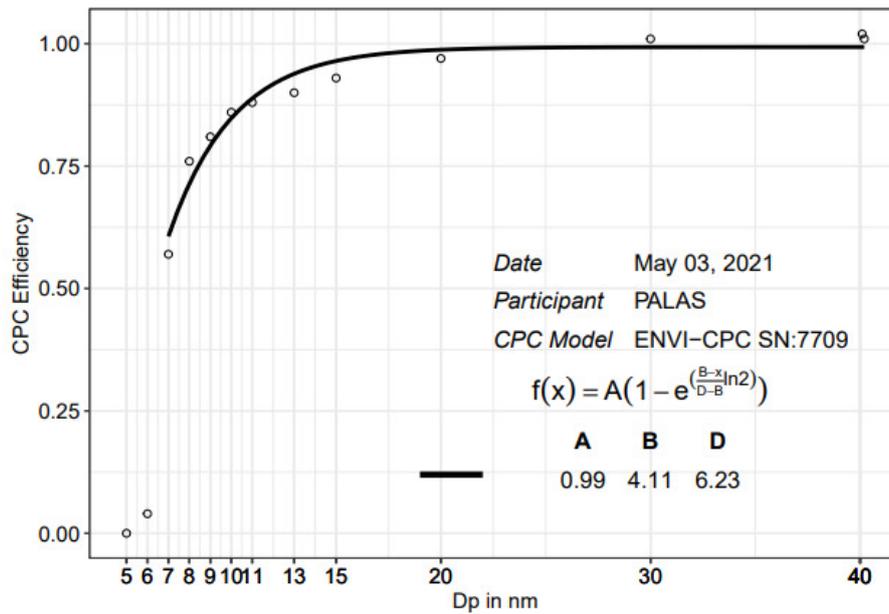


Fig. 1: Counting efficiency curve of the ENVI-CPC system measured at the Leibniz Institute for Tropospheric Research

Extensions/Accessories

The ENVI-CPC system can be equipped with a meteorological sensor that monitors temperature, pressure, humidity, wind speed, wind direction, and precipitation type and intensity of the outdoor air. A climate-controlled weather protection enclosure is available.

优势

- The unique, patented way of providing the working fluid for unattended operation for months
- Intuitive user interface with sophisticated software for data evaluation
- Limitless, integrated network connectivity that supports remote operation and data storage on the internet
- Powerful software package
- Low maintenance

标准和证书

EN 16976:2024-09, ISO 27891:2015

技术数据

测量原理	Condensation of ultrafine particles with optical measurement of concentrations
测量范围(数量浓度)	10^5 particles/cm ³ (single count mode)
测量范围(粒径)	Approx. 5µm
体积流量	0.9 l/min +/- 2% (optional 0.5 l/min additional) (pressure loss isotherme capillary)
Time resolution	1s - 60s
接口	USB, Ethernet (LAN), weather station/butanol level sensor, RS-232, T/rH sensor
User interface	Touchscreen, 800 • 480 pixel, 7" (17.78 cm)
Protocols	UDP, UIDEF, B/H, MODBUS TCP/RTU, ASCII TCP/Seriell
Data logger storage	Approx. 6 GB data storage (2 years)
软件	PDAnalyze
Detection efficiency (at low particle size)	D50 = 10 ± 1 nm (others on request); D90 < 20 nm, D95 @ 40 nm ± 10 nm, D90 @ 1000 nm ± 100 nm
Data acquisition	Digital, 20 MHz processor, 256 raw data channels
Light source	Long term stable LED
外壳	Tabletop device
电源	115 – 230 V, 50/60 Hz
Power consumption	Average power consumption: 40 W
Installation conditions	+10 – +30 °C (others on request)
Accuracy	5% (single count mode), 10% (nephelometric mode)
Response time	$t_{90} < 3$ s
Working fluid	n-Butanol (>99.5%)
Dimensions	330 • 380 • 240 mm (H • W • D)
重量	Approx. 10 kg
Resolution	Min. 1s
Data Management	Prepared for connection to the Palas Cloud MyAtmosphere ("MyAtmosphere-ready"); Internet access and separate registration required. The MyAtmosphere terms of use apply.

应用领域

- 气溶胶研究
- 环境测量
- 环境监测网络
- 工作场所安全与职业暴露研究
- 交通排放监测
- 健康研究
- 移动气溶胶研究



Mehr Informationen:
<https://www.palas.de/zh/product/envicpc100>