# UF-CPC 200




The UF-CPC 200 is a butanol-based nanoparticle counter with high efficiency. It measures the number concentrations of ultrafine particles (UFP) in aerosols. Model 200 is designed for concentrations up to 2 ·$10^6$ particles/$cm^3$. This makes it especially suitable for low dilution measurement of high aerosol concentrations from particle generators, exhaust gas, or ambient air of exposed and heavily polluted areas. In nephelometer mode, measurements up to 2 ·$10^7$ particles/$cm^3$ are possible. The counter can be easily combined with the Palas size classifiers and thus directly allows the measurement of highly concentrated and size-selected aerosols, e.g., for efficiency measurement of HEPA filter media in test stands.

The patented evaporator and condensation module is maintenance-free. This allows continuous operating times of up to one year.

## Operation principle

## Condensation particle counter for number concentration up to 2 • $10^6$ particles/$cm^3$

The aerosol is fed directly to the evaporator unit by the internally adjustable and controlled diaphragm pump, saturated with the working liquid n-butanol. The butanol flows in a spiral trough inside the cylinder to the base of the evaporator. The unevaporated residue is pumped back into the reservoir by a second pump. This actively ensures permanent saturation of the evaporator while preventing 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 volume flow. This is particularly important for long-term measurements. The user can also calibrate the volume flow.

The condensed particles are detected by an optical sensor, which determines the concentrations and size distribution of the condensed particles. This enables simple and efficient quality control.

The system is typically delivered with a cut-off D50 = 4.5 nm (measured with generated and selected NaCl particles). Others are adjustable and can be used optionally.

In the expert mode for research, the user can adjust various parameters to individual needs via the 7″ touch screen.

The UF-CPC system supports a standardized interface with various protocol selection options, such as Modbus or ASCII protocol, for process monitoring applications. All measured data, including the corresponding settings, is stored directly on the device. Thus, the data can be accessed and visualized directly at any time.

### Extensions/Accessories

An air-conditioned weatherproof housing is available for the system.

## BENEFITS

- Intuitive user interface with sophisticated software for data analysis
- Unlimited network compatibility that supports remote control and data storage on the Internet
- Visualization of all operating and measurement data
- Integrated interface for process control applications
- Lower detection efficiency D50 adjustable to 10 nm (others on request)

## NORMS AND CERTIFICATES

ISO 27891:2015

## DATASHEET

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|---|---|
| Measuring principle | Condensation of ultrafine particles with optical measurement of concentrations |
| Measurement range (number $C_N$) | $2 \cdot 10^6$ particles/$cm^3$ (single count mode) |
| Measurement range (size) | 4 – >3,000 nm |
| Volume flow | 0.9 L/min (butanol) 0.3–1 L/min (adjustable for research applications) (others on request) |
| Time resolution | Min. 1s |
| Interfaces | 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, UIDEP, B/H, MODBUS TCP/RTU, ASCII TCP/Seriell |
| Data logger storage | 4 GB |
| Software | 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 | LED |
| Housing | Tabletop device |
| Power supply | 90 – 264 V, 50/60 Hz |
| Power consumption | Average power consumption: 40 W |
| Installation conditions | +10 – +30 °C (others on request) |
| Accuracy | 5 % (single count mode) |
| Response time | $t_{90}$ < 2.8 s, $t_{90-10}$ < 2.0 s |
| Working fluid | n-Butanol (>99.5%) |
| Dimensions | 290 • 240 • 350 mm (H • W • D) |
| Weight | Approx. 10 kg |
| Resolution | Min. 1s |
| Data Management | Prepared for connection to the Palas Cloud MyAtmosphere (“MyAtmosphere-ready”) |

## Applications

- Aerosol research
- Testing of filters and air purifiers
- Environmental measurements
- Occupational exposure and workplace safety studies
- Inhalation and health effects studies
- Process monitoring
- Printer emission studies

Mehr Informationen:
https://www.palas.de/en/product/ufcpc200