

# Mobile Environmental Ultrafine Particle Counter EDM 465

The EDM 465 combines the reliable technology of our butanol condensation particle counters with easy handling and flexible application for environmental monitoring due to a compact, robust and mobile weather housing.

The EDM 465 is applicable for short and long-term continuous monitoring of ultrafine particles and enables a real-time data analysis of nanoparticles and meteorological measurement data.

This configuration places the EDM 465 in the leading position of the mobile ultrafine particle monitoring. The EDM 465 is a fit for purpose, state-of-the-art system capable of performing accurate and high-resolution measurements.

## FEATURES

- Real-time monitoring of ultrafine particles according to CEN TS 16976:2016
- Fully automatic 24/7 monitoring system
- Low maintenance, 30 days unattended operation, remote access
- Energy-efficient sampling with isothermal drying system
- High precision at low and high concentrations excellent counting statistics and reproducibility
- Low diffusion losses
- Versatile data acquisition and communication (data logger with GSM via internet)
- Self-test of all optical and pneumatic components for high quality standards
- Rinsing air for protecting laser and detector in optical cell
- Meteorological sensors
- Instrument parameters secured against data loss



## APPLICATIONS

- Mobile monitoring of ultrafine particles
- traffic emission monitoring
- Source identification
- Epidemiological health studies
- Public site and urban monitoring

# Technical data

## SPECIFICATIONS

|                                     |  |
|-------------------------------------|--|
| measurement principle               | condensation particle counter                            |
| working fluid                       | n-butanol (n-butyl alcohol)                              |
| particle size range                 | 4 nm to 1 µm (pre-impactor)                              |
| detection efficiency                | D50 = 7 nm (verified with silver particles), D90 < 14 nm |
| max concentration single count mode | 150 000 p/cm <sup>3</sup>                                |
| max concentration photometric mode  | 107 p/cm <sup>3</sup>                                    |
| reproducibility                     | >95% for single particle count mode                      |
| response time                       | trise < 5 s, tfall < 5 s                                 |

## FUNCTION

|                           |   |
|---------------------------|---|
| sampling and conditioning | 1 m sampling pipe with sampling head, isothermal humidity extraction via Nafion membrane, sensor-controlled |
| diffusion losses          | < 30% for smallest relevant particle size of 7 nm   |
| weather housing           | stainless steel, powder-coated, thermally isolated, temperature-controlled                                  |
| climate sensors           | wind speed and direction, precipitation, pressure, temperature relative humidity; GPS positioning           |
| pumps                     | pulse free carbon vane pumps, flow rate of sample air 0.3 L/min   |
| flow control              | critical orifice, temperature-stabilized  |
| total flow rate           | 1.5 L/min, ≤ 5% difference to the nominal flow rate   |

## HANDLING

|                        |   |
|------------------------|---|
| operation              | data logger and netbook integrated in housing for online data, meteorological sensor and GPS position                             |
| interfaces             | data logger, USB, GSM with SIM card for mobile network  |
| analog input           | 1 port (0 – 10 V) for auxiliary sensors   |
| power supply           | 110 – 220 VAC, 50 – 60 Hz   |
| power consumption      | 100 - 150 W   |
| temperature range      | -20 to + 40°C (-4 to 104°F), RH < 95%,  |
| pressure range         | 500 – 1100 mbar   |
| dimensions (d x w x h) | housing: 49 x 28 x 65 cm (19.3 x 11 x 25.6 in),<br>total height with sampling pipe and meteorological sensor:<br>140 cm (55.1 in) |
| weight                 | 38 kg (83 lbs)  |