

A23 bCPC

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Designed for vehicle emission measurements

Airmodus A23 Condensation Particle Counter is a user-friendly tool for all applications where counting aerosol particles larger than 23 nm is a necessity. The A23 CPC is compliant with the Particle Measurement Protocol (PMP) for EURO 5/6. It fulfills the requirements of UN/ECE R49 and UN/ECE R83.

A versatile particle counter

The A23 can be used both as a stand-alone instrument for measuring the total particle number concentration, and as a counter in different kinds of aerosol measurement systems. It is **easy to use and handle**. All settings can be quickly adjusted from a handy touch screen, which also displays the current concentration reading and instrument diagnostics.



The A23 is also compatible with the Airmodus Particle Size Magnifier A10.

Benefits of the A23

- The saturator is made of robust and inert stainless steel in order to ensure stable operation
- Narrow pulse width for higher counting accuracy
- Easy to use touch screen
- Improved usability and design: all connections optimized for easy access

Regulation requirements

A23

50% ($\pm 12\%$) counting efficiency at 23 nm (± 1 nm)	✓
>90% counting efficiency at 41 nm (± 1 nm)	✓
Linear concentration response and counting accuracy of $\pm 10\%$ across the range of single particulate counting mode	✓
Operates under full flow operating conditions	✓
Data reporting frequency ≥ 0.5 Hz	✓
T90 response time < 5 s	✓

A23 bCPC Specifications

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Particle size range	23 nm – 2.5 µm Dp50% = 23 nm*
Concentration	0 – 100 000 #/cm ³ Up to 10 000 #/cm ³ in single particle counting mode with coincidence <10%; higher concentrations with Total Scattering Mode Correction
Aerosol sample flow	Nominal flow 1 lpm, controlled with a critical orifice; no dilution inside the instrument
Response time	t ₉₅ 1.15 s**
False counts	<0.01 #/cm ³
Working fluid	n-Butanol (>99.5%)
Sample conditions	Pressure: 75 to 105 kPa Relative humidity: 0 to 95% non-condensing (preferably <40%***)
Environmental conditions	Temperature: 15°C to 35°C Pressure: 75 to 105 kPa Relative humidity: 0 to 95% non-condensing
Communication	<i>Analog in:</i> BNC connector, 0 to 10 V (reading data of external sensor) <i>Analog out:</i> BNC connector, 0 to 10 V, user-selectable function output (linear concentration, also DMA voltage control) <i>Pulse out:</i> BNC connector <i>Serial:</i> RS-232 <i>Ethernet:</i> RJ45 <i>USB:</i> type B connector All communication based on ASCII character-encoding scheme.
Fittings	<i>External Vacuum:</i> 1/4 in. stainless steel tube <i>Inlet:</i> 1/4 in. stainless steel tube
Software	Airmodus A2X software for online data acquisition (for Microsoft Windows, 7 or newer)
External vacuum requirement	100 - 400 mbar pressure at NTP (or <40% of inlet pressure)
Power requirements	100 - 240 VAC max. 320 W universal AC input/full range
Dimensions and weight	260x230x400 (height x width x depth in mm) 10.5 kg
Shipping conditions	Temperature: 0 - 40°C Relative humidity: <95% non-condensing The instrument should be shipped in upright position and should be protected against tremor and blows.

*) Cut-off size in mobility equivalent diameter. See calibration certificate.

**) Enroth et al. 2018. <https://doi.org/10.1080/02786826.2018.1460458>

***) With high relative humidity, an aerosol drier should be used to prevent excess water condensation inside the instrument.
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