

Condensation Particle Counter (Model A20)

Airmodus Condensation Particle Counters are designed to count individual aerosol particles accurately from very low to high concentrations. They are ideal for ambient air monitoring as well as aerosol research.

The A20 is a robust and reliable tool for aerosol particle measurements in all applications where precision and sensitivity is of the essence. It is a user-friendly tool for counting aerosol particles larger than 5 nm (by request A20 can be delivered with a cut-off between 5 – 10 nm, e.g. for ambient measurements 7 nm).

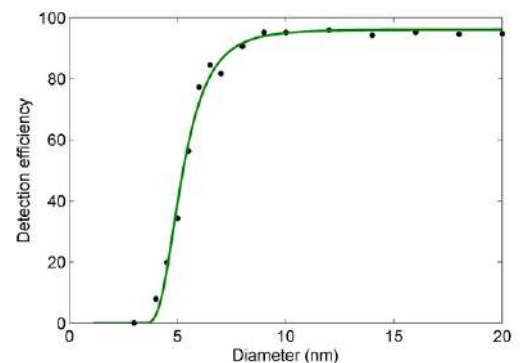
A VERSATILE PARTICLE COUNTER

The A20 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 A20 is also compatible with the Airmodus Particle Size Magnifier A10. Use the A10 when you want to study particles as small as 1 nm!

BENEFITS

- High statistics for low concentrations: the instrument is specially designed for precise particle counting and the sample flow is not diluted
- High accuracy for high concentrations: up to 30 000#/cm³ in single particle counting mode, for higher concentrations the Total Scattering Mode Correction is automatically applied
- Easy to use touch screen, adjusting the settings and data logging is easy. User-friendly operation software is delivered with the instrument
- All connections optimized for easy access



Specifications

Particle size range	5 nm – 2.5 µm Dp50% = 5 nm* (on request 5 – 10 nm)
Concentration	0 – 100 000 #/cm ³ Up to 30 000 #/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
Response time	t95 1.15 s**
False counts	<0.001 #/cm ³
Working fluid	n-Butanol (>99.5%)
Operating temperatures (Dp50% = 5 nm*)	Saturator: 39oC Condenser: 15oC Optics: 40oC
Sample conditions	Pressure: 75 to 105 kPa Relative humidity: 0 to 95% non-condensing (preferably <40%)***
Environmental conditions	Temperature: 15oC to 35oC 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 - 40oC 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. On request the cut-off can be calibrated to be in the range 5 – 10 nm.

Note: When delivered as part of an A11 nCNC system, the A20 CPC is delivered with a cut-off of about 10 nm.

**) 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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