AIRMODUS

A12 nCNC (PSM 2.0 & A30 CPC)

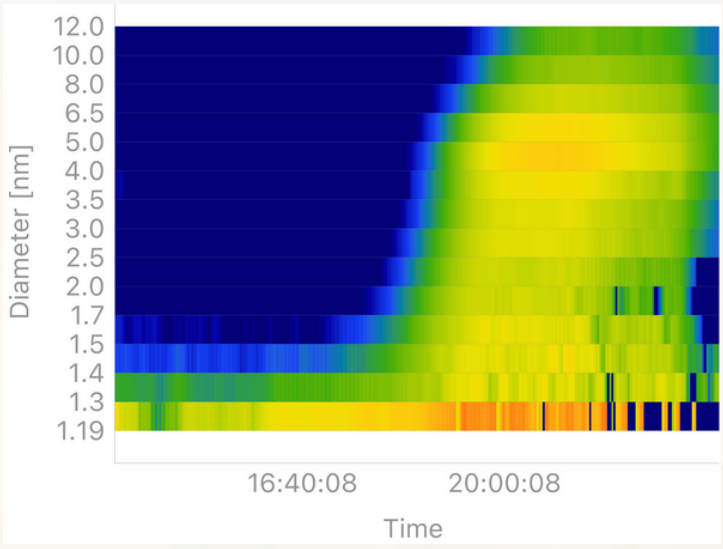
Airmodus A12 Nano Condensation Nucleus Counter system (nCNC) measures particles as small as 1 nm in diameter. It is a complete system consisting of a particle size magnifier (PSM 2.0), a condensation particle counter (A30 CPC) and operation software. Airmodus A12 can be used to measure the total number concentration of sub-micron particles, or to learn about characteristics and dynamics of the **1-12 nm** particles in real time.

Size range

✓ **Classify 1 - 12 nm particles into 1 - 14 bins**

Concentration range

✓ **Sensitive between 100 - 500 000 #/cm ^{3}**



A screen capture of the inversion results in **AirmodusAnalyze** analysis software showing dNdlogDp as a function of time (HH:MM:SS)

Benefits

- ✓ **New logging software**
- ✓ **New analysis software**
- ✓ **Automated fill & drain**
- ✓ **Integrated bottles**
- ✓ **Widened size range**
- ✓ **Enhanced stability**
- ✓ **Enhanced sensitivity**
- ✓ **Extended concentration range**

The A30 can be used both as a stand-alone instrument for measuring the total particle number concentration, as well as the detector in various aerosol measurement systems. It is easy to use and handle. All settings can be quickly adjusted from the touch screen, which also displays the current concentration reading and instrument diagnostics.

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✓ A12 nCNC - Specifications

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Measurement range	1 - 1000 nm. 50% cut-off selectable: 1.19 – 12 nm*) A30 delivered with 20 nm cut off
Concentration	Calibrated: 0 – 100 000 #/cm^3 A30 CBC measures up to 500 000 #/cm^3
Aerosol sample flow	2.5 lpm (sample flow to CPC 1 lpm)
Response time	t95 < 2 s**)
Working fluid	PSM: Diethylene Glycol (>99%) CPC: n-Butanol (>99%)
Sample conditions	Pressure: 90 to 105 kPa Relative humidity: 0 to 95% non-condensing***)
Environmental conditions	Temperature: 15˚C to 30˚C Pressure: 90 to 105 kPa Relative humidity: 0 to 95% non-condensing
Shipping conditions	Temperature: 0 - 40˚C Relative humidity: <95% non-condensing
External vacuum requirement	The instrument should be shipped dry, in upright position and should be protected against tremor and blows.
External compressed air requirement	100 - 350 mbar pressure at NTP 1.5 - 2.5 bar at NTP The air should be free of particles, oil and water (dew point below 0˚C); maximum operating pressure is 3.0 bar at NTP.
Fittings	Airmodus PSM 2.0: External vacuum: one-touch fitting for 6 mm tubing External compressed air: one-touch fitting for 6 mm tubing Inlet: 1/4 in. stainless steel tube Outlet: 1/4 in. stainless steel tube Airmodus A30 CPC: External vacuum: one-touch fitting for 6 mm tubing Inlet: 6 mm stainless steel tube
Communication	Airmodus PSM 2.0: Serial: RS-232 USB: type B connector Analog out: BNC connector 0 - 10 V for external devices, e.g. controlling of a DMA or ion filter. Airmodus A30 CPC: Analog out: BNC connector 0 - 10 V, user-selectable function output (linear concentration, also DMA voltage control) Pulse out: BNC connector Serial: RS-232 Ethernet: RJ45 USB: type B connector Both instruments: All communication based on ASCII character-encoding scheme.
Power requirements	Both instruments (PSM and CPC) use an external power adaptor each (provided with the instruments): Airmodus PSM 2.0: Power adaptor input: 100 - 240 VAC 50/60 Hz max. 280 W Power adaptor output: 12VDC 21 A Airmodus A30 CPC: Power adaptor input: 100 - 240 VAC 50/60 Hz, max. 100 W Steady state consumption: 40 W Power adaptor output: 12VDC 14 A
Computer and Software	AirmodusAnalyze software for fast data inversion. AirmodusLogger software for real time data acquisition for a computer using Microsoft Windows****)
Dimensions and weight	Airmodus PSM 2.0: 290 x 450 x 465 (h x w x l in mm) 17.0 kg Airmodus A30 CPC: 190x170x250 (height x width x depth in mm) 4.9 kg

*) Nickel Chromium equivalent activation diameter. See calibration certificate. Note: When delivered as part of an A12 nCNC system, the A20 / A30 CPC is delivered with a cut-off of about 20 nm (see calibration certificate).
**) Enroth et al. 2018. https://doi.org/10.1080/02786826.2018.1460458, Sulo et al. 2023 https://ar.copernicus.org/preprints/ar-2023-18/
***) Above 40% please dry the sample to avoid excess water condensation inside the instruments
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