

SCANNING MOBILITY PARTICLE SIZER WITH CONDENSATION PARTICLE COUNTER

SMPS+C 5416 | 5420 | DMA

The GRIMM SMPS+C systems feature the Vienna-type DMA design (Winklmayr et al., 1991; Reischl et al., 1997), well known for highest size resolution and lowest particle diffusional losses – even for the smallest particles.

The SMPS+C systems, based on the GRIMM 5416 and the 19" version 5420 CPC, are operated at an aerosol inlet flow rate of 0.3 L/min and a sheath flow rate of 3 L/min. GRIMM offers a flexible design of the Vienna-type DMA with two electrodes of different length to accommodate a variety of experimental needs.

To expand the size range, the GRIMM SMPS+C can be combined with a GRIMM Optical Particle Counter to build a Wide Range Aerosol Spectrometer (WRAS) that measures particle size distributions up to the size of 32 µm.



FEATURES

- particle size distribution from 5 – 1094 nm
- two Vienna-type DMAs
- sample flow rate = 0.3 L/min
- sheath flow rate = 3 L/min
- rugged, compact and reliable
- fully automated use with our software
- analog inputs for additional sensors
- anti-spill CPC saturator design
- comprehensive self-test for highest reliability

APPLICATIONS

- fundamental aerosol research
- environmental & climate studies
- nanotechnology process monitoring
- printer emission studies
- inhalation & exposure studies
- studies on atmospheric nucleation
- studies on nanoparticle growth, coagulation & transport
- engine exhaust studies
- mobile aerosol studies
- workplace monitoring

SMPS+C

**M - DMA
5 - 350 nm**

**L - DMA
10 - 1094 nm**

**AM-241, aDBD
soft X-ray**

real - time

TECHNICAL DATA

SPECIFICATIONS

detector type	condensation particle counter (CPC)
working fluid	n-butanol (n-butyl alcohol)
max. concentration single count mode	150 000 p/cm ³
max. concentration photometric mode	10 ⁷ p/cm ³
reproducibility	> 95% for single count mode > 90% for photometric mode
response time $t_{10} - t_{90}$	< 3 s
size range	5 – 350 nm (M - DMA); 10 - 1094 nm (L - DMA)
size resolution	stepping mode: 45 - 255 channels scanning mode: 64 channels per decade; logarithmic spacing

FUNCTION

DMA dimensions	$R_i = 26$ mm, $R_o = 40$ mm; L= 88 mm (M) or 350 mm (L)
output HV module	5 – 10 000 V positive polarity; negative polarity on request
internal pump	yes
sample flow rate	0.3 L/min
sheath flow rate	3 L/min
port for external sensors	yes

HANDLING

ambient temperature	10 – 40°C (50 – 104°F)
ambient humidity	0 – 95% RH, non-condensing
absolute pressure range	600 - 1100 mbar at full voltage range
power supply	85 – 264 VAC, 47 – 440 Hz
power consumption	80 – 130 W
interfaces	USB or RS-232
dimensions DMA (h x w x d)	M – DMA: 23.4 x 14 x 15.6 cm (9.2 x 5.5 x 6.1 in) L – DMA: 47.8 x 14 x 15.6 cm (18.8 x 5.5 x 6.1 in)
weight DMA	M – DMA: 5.7 kg (12.6 lbs); L – DMA: 7.9 kg (17.3 lbs)
dimensions CPC (h x w x d)	40 x 25 x 29 cm (15.7 x 9.8 x 11.4 in)
weight CPC	12.4 kg (27.3 lbs)