

MINI WIDE RANGE AEROSOL SPECTROMETER

MiniWRAS 1371



The compact Wide Range Aerosol Spectrometer (MiniWRAS) is the only portable instrument on the market that allows simultaneous and real-time monitoring of both dust and nanoparticles.

Designed and specifically built for indoor air quality monitoring, the MiniWRAS is a fit for purpose, state-of-the-art system that combines optical and electrical particle detection in one instrument.

The MiniWRAS features the measurement of an ultra-wide particle size range from 10 nm - 35 μm in 41 high resolution particle size channels and the simultaneous measurement of PM_{10} , $\text{PM}_{2.5}$ and PM_1 with remote instrument control and wireless data transmission. This portable and ready-to-use instrument can be flexibly deployed for various IAQ monitoring projects.



FEATURES

- ultra-wide size range from 10 nm to 35 μm
- PM_{10} , $\text{PM}_{2.5}$, PM_1 and particle size distribution, particle surface, and dust mass
- high precision over 41 equidistant channels
- no consumables
- non-radioactive particle charger
- versatile data acquisition and communication interfaces (Bluetooth, USB, RS-232)
- easy to use with GRIMM software
- optional sensor for temperature and relative humidity
- self-test of all optical and pneumatic components for high quality standards
- rinsing air for protecting laser and detector in optical cell

APPLICATIONS

- nanoparticle and PM monitoring (e. g. $\text{PM}_{2.5}$)
- Indoor Air Quality (IAQ) in buildings
- IAQ in vehicles, airplane cabins, cockpits, busses, trains
- nanoparticle source identification
- workplace monitoring
- R&D testing in industry

NANO

PM_{10} $\text{PM}_{2.5}$
 PM_1

10 nm - 35 μm

IAQ

real - time

TECHNICAL DATA

SPECIFICATIONS

measured parameters	dust fractions acc. to EN 481 (inhalable, thoracic, respirable) PM _{10'} , PM _{2.5'} , PM _{1'} , number concentration and size distribution
dust mass	0 – 100 000 µg/m ³
particle size range	10 nm – 35 µm (10 – 193 nm electrical, 0.253 – 35 µm optical)
size channels	41 (10 electrical and 31 optical)
particle number	3 000 – 500 000 p/cm ³ (electrical) 0 – 3 000 000 p/L (optical)
reproducibility	> 97% of total measuring range (optical)

FUNCTION

detection principle optical	light scattering at single particles; detection volume aerodynamically focused, no border zone error
optical cell detector	diode laser 660 nm fast signal processing with 2 µs pulse length, 2 x 16 raw data channels
time resolution	6 s, 31 channels (storage interval 1 min)
detection principle electrical detector sensitivity time resolution	electrical mobility spectrometer with Faraday Cup Electrometer 0.25 fA 60 s, 10 channels 6 s each (storage interval 1 min)
volume flow internal rinsing air flow rate	1.2 L/min, ± 3% constant due to self-regulation 0.4 L/min, protects laser optics, reference air for self-test

HANDLING

operation	GRIMM MiniWRAS software (wireless or data cable)
interfaces	Bluetooth, USB, RS-232
analog input	external sensor for temperature and relative humidity
power supply	in: 100 – 240 VAC, 47 – 63 Hz, out: 18 VDC, 2.5 A
battery	Li-Ion battery, 14.4 VDC, 4.8 Ah for 8 h operation
dimensions (h x w x d)	34 x 31 x 12 cm (13.4 x 12.2 x 4.7 in)
weight	7.6 kg (16.8 lbs)
operating conditions	+4 to +40°C (39 - 104°F), RH < 95%, non-condensing

