

# THE STANDARD FOR PORTABLE NANOPARTICLE AND DUST MONITORING



a member of  
**DURAG GROUP**

## MODEL 1371 MiniWRAS

The ULTIMATE particle monitoring system for research and industry professionals. The compact Wide Range Aerosol Spectrometer (MiniWRAS) is used by many reputable organisations throughout the world. This is the only portable instrument on the market that allows simultaneous and precise 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 device.

The system offers many features, such as a 10 nm to 35 µm ultra-wide particle size range, simultaneous PM<sub>1</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> measurement, 41 high resolution particle size channels, remote data transmission and instrument control and much more. The system is easy to use and may be operated off batteries or mains and it can be easily transported and deployed for short or continuous long term IAQ monitoring projects.

Just some of the standout features this latest generation system offers include a 10 nm to 35 µm ultra-wide particle size range. The MiniWRAS is the best choice for monitoring indoor PM values with particle size distribution including nanoparticles, indoor air quality at workplaces, inside of vehicles, airplane cabins, trains, R & D testing, and many more.



### YOUR BENEFITS

- Ultra-wide size range from 10 nm to 35 µm
- Versatile data acquisition and communication (Bluetooth, USB, RS-232)
- Real-time counting and classifying of nano and dust particles in one system
- PM<sub>10</sub>, PM<sub>2.5</sub>, PM<sub>1</sub> and particle size distribution, particle surface, and dust mass
- High precision over 41 size channels
- Self-test for all optical and pneumatic components ensures high quality standards
- Internal rinsing air protects the laser and detector in the optical cell
- Optional sensor for temperature and relative humidity
- Easy to use with GRIMM-Software (wireless)
- 7 size channels for nanoparticles <100 nm, 19 size channels for submicron particles <1 µm
- Total inlet volume (1.2 liter/min) is analyzed with optical cell and electrical sensors
- Excellent counting statistics and reproducibility at low and high concentrations

### APPLICATIONS

- Nanoparticle and PM monitoring (e.g. PM<sub>2.5</sub>)
- 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<sub>10</sub>  
PM<sub>2.5</sub> PM<sub>1</sub>**

**10 nm-35 µm**

**IAQ**

**REAL-TIME**

# TECHNICAL DATA

## SPECIFICATIONS

Measured parameters	Particle number for all size channels (size distribution) as well as PM values (PM <sub>10</sub> , PM <sub>2.5</sub> , and PM <sub>1</sub> ) and dust fractions acc. EN 481 (inhalable, thoracic, and respirable)
Dust mass	0.1 µg/m <sup>3</sup> – 100 mg/m <sup>3</sup>
Particle size range	10 nm – 35 µm (10 – 193 nm electrical, 0.253 – 35 µm optical)
Size channels	41 in total (10 electrical and 31 optical)
Particle number	3 000 – 500 000 particles/cm <sup>3</sup> (electrical) 0 – 3 000 000 particles/liter (optical)
Reproducibility	± 3% of total measuring range (optical)

## FUNCTION

Detection principle	Optical: light scattering at single particles Detection volume aerodynamically focused, no boarder zone error
Optical cell	Diode laser 660 nm, P <sub>max</sub> = 60 mW, P <sub>nom</sub> 0.5/32 mW CW (multiplex)
Detector	Super 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: electrical mobility spectrometer
Detector	Faraday cup electrometer with 0.25 fA sensitivity
Time resolution	60 s, 10 channels 6 s each (storage interval 1 min)
Volume flow	1.2 l/min, ± 3% constant due to self regulation
Internal rinsing air	0.4 l/min, protects laser optics, reference air for self-test

## HANDLING

Operation	GRIMM software (wireless or data cable)
Interfaces	Bluetooth, USB, RS-232
Analogue 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	34 x 31 x 12 cm / 13.4 x 12.2 x 4.7 inches (L x W x H)
Weight	7.6 kg (16.8 lbs)
Operating conditions	+4 to +40°C (39 – 104°F), RH < 95 %, non-condensing, air only

This technical data might be changed without notice.

Dealer: