

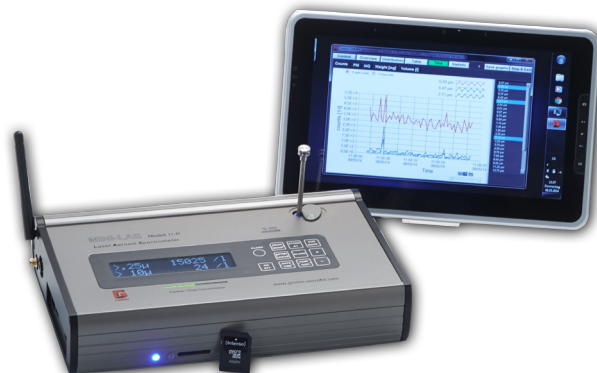
# THE REVOLUTION IN PORTABLE AEROSOL SPECTROMETRY



a member of  
**DURAG GROUP**

## MODEL 11-R (RESEARCH)

For more than 30 years GRIMM aerosol spectrometers are successfully used all over the world and appreciated by thousands of users. The 11-R combines reliable optical single particle detection for counting and classifying dust particles with advanced wireless data communication and optical status control in a super slim compact and rugged design. The best choice for all applications in aerosol science and indoor air quality! The 11-R is suitable for flexible usage with a battery and remote control for real-time data acquisition and data analysis and also for continuous measurements via power supply.



This configuration puts the 11-R into the worldwide leading position of portable aerosol spectrometers for any sophisticated application where particle size distribution, surface distribution, dust mass or PM values are required. The best choice for reliable, flexible and real time measurements for scientific applications, indoor air quality or process control in industry.

## YOUR BENEFITS

- Versatile data acquisition and communication (Bluetooth, USB, Ethernet, RS-232, SD card)
- High resolution data in 31 size channels (number, surface and mass distribution)
- Precise PM values (PM<sub>10</sub>, PM<sub>2.5</sub> and PM<sub>1</sub>) and workplace monitoring according EN 481
- Coincidence control with multi-colour LED indicator
- Condensation control in the optical cell with signal LED
- Wireless communication control with signal LED
- Internal rinsing air protects the laser and detector in the optical cell during operation
- Built-in inlet closure prevents contamination of the optical cell during storage
- Self-test for all optical and pneumatic components assures high quality standards
- Excellent counting statistics and reproducibility at low and high dust concentrations
- Total inlet volume flow (1.2 liter/min) is analyzed in the optical cell
- Integrated 47 mm PTFE filter (GRIMM dual technology)
- Ease of use via keypad or GRIMM software (wireless)

## APPLICATIONS

- Aerosol science
- Indoor air quality (IAQ) in buildings and vehicles
- Workplace monitoring
- Process control in industry



**0.25-32 µm**

**PM<sub>10</sub>**

**PM<sub>2.5</sub>**

**EN 481**

**REAL-TIME**

# TECHNICAL DATA

## SPECIFICATION

Measurement range	Dust fractions (EN 481) inhalable, thoracic, and respirable PM <sub>10</sub> , PM <sub>2.5</sub> and PM <sub>1</sub> as well as particle number for all size channels (size distribution) and mass distribution
Particle size range	0.25 – 32 µm
Size channels	31 in total 0.25/0.28/0.3/0.35/0.4/0.45/0.5/0.58/0.65/0.7/0.8/1/1.3/1.6/2/2.5/3/3.5/4/5/6.5/7.5/8.5/10/12.5/15/17.5/20/25/30/32 [µm]
Particle number	0 – 3 000 000 particles/liter
Dust mass	0.1 µg/m <sup>3</sup> – 100 mg/m <sup>3</sup>
Reproducibility	± 3% for total measuring range

## FUNCTION

Particle detection principle	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 (selectable storage intervals 6 s, 1, 5, 10, 15, 30, 60 min)
Volume flow	1.2 l/min, ± 3% constant due self regulation
Internal rinsing air	0.4 l/min, protects laser optics, reference air for self-test
Sample collection	47 mm PTFE filter

## HANDLING

Operation	Keypad or PC with GRIMM software (wireless or data cable)
Interfaces	Bluetooth, USB, Ethernet, RS-232, 4 GByte SD internal card
Analogue input	3 values (0 – 10 V), for auxiliary sensors
GPS	optional position reckoning
Power supply	in: 100 – 240 VAC, 47 – 63 Hz, out: 18 VDC, 2.5 A
Battery	Li-Ion battery, 12 V, 2.3 Ah for 8 h operation
Power input	5.4 W standard, 14.4 W maximum during battery charging
Dimensions	28 x 17 x 6 cm / 11 x 6.7 x 2.4 inches (L x W x H)
Weight	2.1 kg / 4.6 lbs
Operating conditions	+4 to +40°C (39 – 104°F), RH < 95 %, non-condensing, non-corrosive or explosive gases
Storage and transport	-20 to +50°C (-4 – 122°F), RH < 95 %

This technical data might be changed without notice.

Dealer:

D\_E\_11-R\_V1.0