# PROMO® SINGLE




The Promo® Single is a scattered-light aerosol spectrometer for continuous particle size and concentration measurement. Sensors with different measurement volumes can be easily connected via optical fibers and interchanged as needed. Depending on the application, sensors with a heatable cuvette up to +250 °C and pressure-resistant versions up to 14 bar overpressure are available.

Central to the measurement performance is a white-light LED light source. The compact 19-inch rack-mount enclosure, with its reduced depth and lower weight, allows for flexible integration into existing systems and test benches. The Promo® Single is designed for 24/7 continuous operation and can be integrated into higher-level process control systems via interfaces such as Modbus.

## OPERATION PRINCIPLE

## SCATTERED LIGHT AEROSOL SPECTROMETER SYSTEM WITH FIBER-OPTIC TECHNOLOGY

The Promo® Single operates on the principle of 90° scattered light detection: Particles are guided individually through a defined measurement volume and illuminated by a high-luminance white-light LED. The scattered light is detected at a right angle by a photomultiplier and converted into an electrical signal. The intensity of this signal is a direct measure of particle size. The patented T-aperture eliminates edge-zone errors, and coincidences—the simultaneous presence of multiple particles in the measurement volume—are detected and corrected in the individual signal. The unique calibration curve of the white light source enables precise size assignment across the entire measurement range.

### Extensions

Promo® Aerosol Sensor 2070: dp ≈ 0.2–40 $\mu$m | $C_{N\,max} \approx 10^6$ particles/cm$^3$

Promo® Aerosol Sensor 2100: dp ≈ 0.2–40 $\mu$m |$C_{N\,max} \approx 5 * 10^5$ particles/cm$^3$

Promo® Aerosol Sensor 2300: dp ≈ 0.2–105 $\mu$m |$C_{N\,max} \approx 4 * 10^4$ particles/cm$^3$

Promo® Aerosol Sensor 2500: dp ≈ 0.3–105 $\mu$m | $C_{N\,max} \approx 4 * 10^3$ particles/cm$^3$

Promo® Aerosol Sensor 2xx0 P: pressure resistant < 14 bar overpressure | process temperature -20 °C–+150 °C

Promo® Aerosol Sensor 2xx0 HP: pressure resistant < 14 bar overpressure | T  +250 °C | process temperature -20 °C–+250 °C

## BENEFITS

- Durable, robust, and energy-efficient thanks to LED technology
- 24/7 continuous operation
- Very high size resolution
- Concentration range from < 1 particle/cm³ to 10 particles/cm³
- Calibration curves for different refractive indices
- Very high and reproducible counting efficiency starting at 0.2 $\mu$m
- Fiber-optic technology
- Calibration and cleaning can be performed by the customer

## DATASHEET

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|---|---|
| Measuring principle | Optical light-scattering |
| Measurement range (number $C_N$) | $< 1 \bullet 10^6$ particles/$cm^3$ |
| Measurement range (size) | 0,2–10 $\mu$m, 0,3–17 $\mu$m, 0,6–40 $\mu$m, 2–100 $\mu$m |
| Volume flow | 5 l/min |
| Size channels | Max. 128 (64/decade) |
| Time resolution | 1 s |
| Interfaces | USB, Ethernet (LAN), RS-232/485 |
| User interface | Touchscreen, 7″ (17,78 cm) |
| Protocols | UDP, ASCII, Modbus |
| Software | FTControl, PDAnalyze |
| Light source | White LED light source |
| Housing | Table housing with mounting bracket for rack installation |
| Support options | Direct Remote Access |
| Operating system | Windows 10 IoT (LTSC) |
| Power supply | 115–230 V, 50/60 Hz |
| Power consumption | Max. 100 W |
| Installation conditions | +5–+40 °C (control unit) |
| Dimensions | 185 • 485 • 295 mm (H • W • D) (19″) |
| Weight | Control unit: approx. 8.5 kg, sensor: approx. 2.1 kg |

## APPLICATIONS

- Filter Testing and Separation
- Process Monitoring and Quality Control
- Environmental and Occupational Safety
- Research and Development

Mehr Informationen:
https://www.palas.de/en/product/promosingle