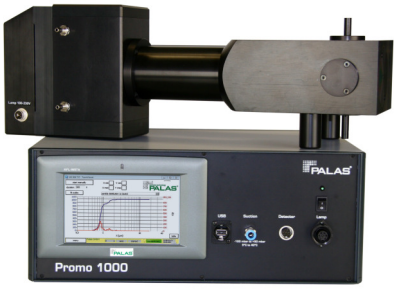
Print View

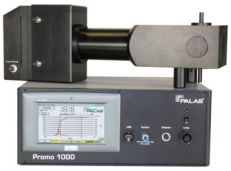
Promo® 1000



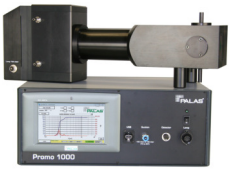
Powerful scattered-light aerosol spectrometer system for particle measurement from 120 nm

Model Variations

Promo® 1000 H
With heating regulation up to 120 °C for welas® aerosol sensors



Promo® 1000 HP
With automatic regulation of sampling volume flow by the aerosol sensors welas® under overpressure up to 10 bar or in temperatures to 120 °C



Promo® 1000 P
With automatic regulation of sampling volume flow by the aerosol sensors welas® under overpressure up to 10 bar

Promo® 1000

Description

Promo® 1000 is a light-scattering aerosol spectrometer system for particle size analysis and concentration determination that can be equipped with all welas ® 1100 and 1200 sensors[1] . These sensors allow reliable measurement in the concentration range from < 1 particle/cm^3 up to 5 • 10^5 particles/cm^3.

With Promo® 1000 particles sizes above 120 nm can be reliably measured, as the special high power xenon high pressure lamp with very high light intensity and the photomultiplier are directly integrated in the aerosol sensor.

Unique are up to four measuring ranges in only one device:

- 0.12 μm – 3.5 μm (additionally in welas® 1000 and Promo® 1000)
- 0.2 μm – 10 μm
- 0.3 μm – 17 μm
- 0.6 μm – 40 μm.

Promo® 1000 is famous for up to 128 size channels per measuring range and a concentration range from < 1 particle/cm^3 to 5 • 10^5 particles/cm^3.
The best size classification accuracy and the best size resolution are guaranteed by the following special features (see Graph 1):

- White light and 90° light-scattering detection
  ⇒ **Unambiguous calibration curve**
- Patented T-aperture
  ⇒ **No border zone error**
- New digital individual signal processing
  ⇒ **Coincidence detection and correction of the individual signal making it possible to measure higher concentrations**

A touch display ensures user-friendly operation. Measurements can be started easily, and all data, such as the current number distribution and the number concentration, as well as 24 further statistical values, can be evaluated and displayed in real time. All incoming data can be stored with a max. temporal resolution of 1 s. For data transfer, Promo® can also be integrated into a company network.

Promo® has a standard interface and can be controlled by a process control system or by a simple Labview program. **The Promo® measurement technology:**

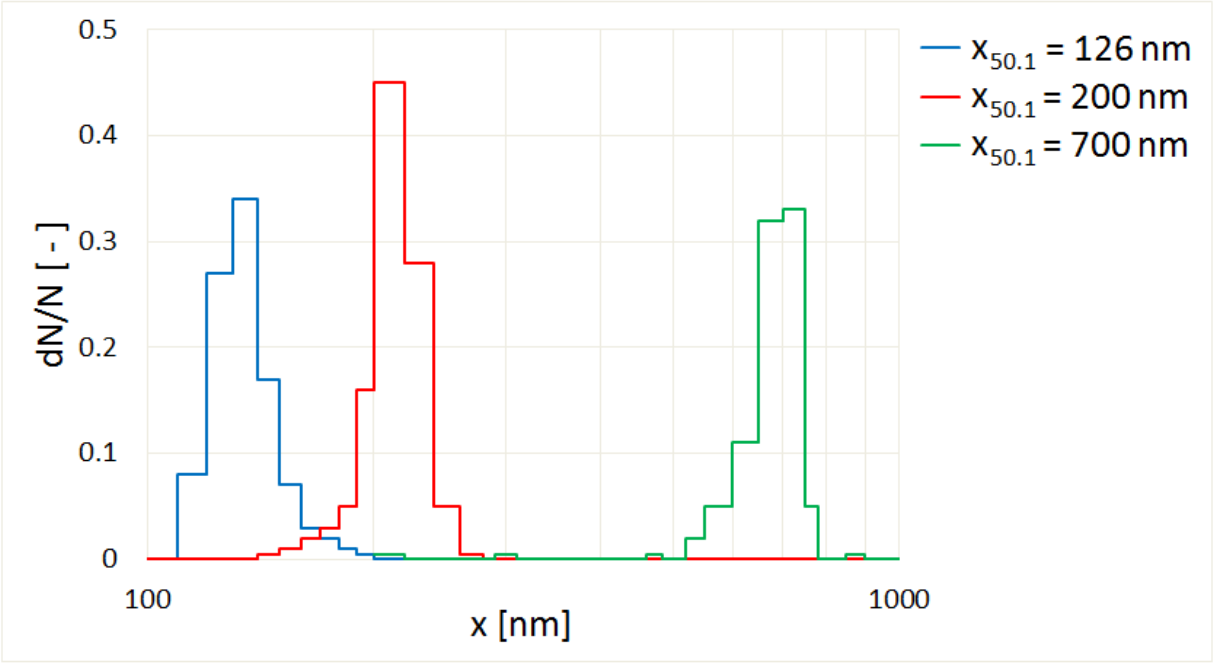
Promo® has a new, fast 20 MHz signal processing processor, which analyses the progression of each particle signal.

This makes it possible to recognise coincidental events in light scattering measurement technology at the individual signal and correct them (according to Dr. Umhauer / Prof. Dr. Sachweh). This way it is possible to increase the maximum concentration limit up to 5 • 10^5 particles/cm^3.

Furthermore, the new signal detection electronics, which include a new, powerful logarithmic A/D converter, allow particles of 120 nm to be measured with a 50 % counting efficiency.

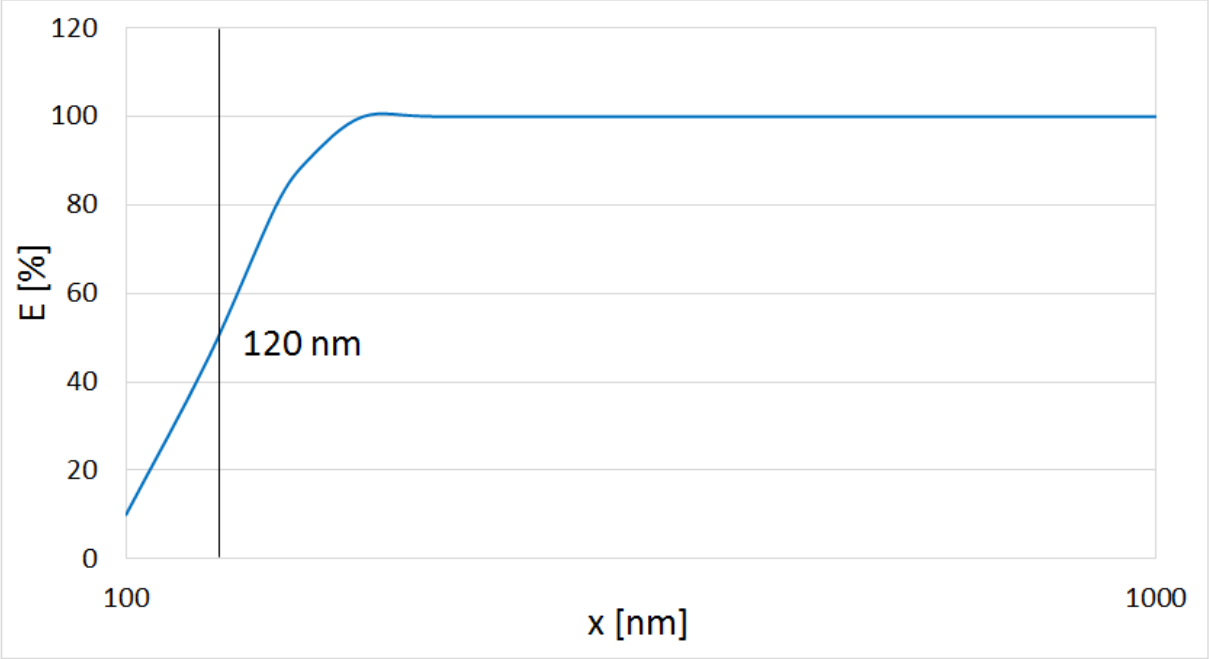
High classification accuracy, high resolution capability and a high counting efficiency are the prerequisite for unambiguous particle measurement.

[1] welas® 1100 and 1200 sensors: https://www.palas.de/en//en/product/aerosolsensorswelas1000



Graph 1: Resolution capability and classification accuracy (1200 sensor)

The Promo® is characterized by its very high counting efficiency starting from 0.12 μm!



Graph 2: Counting efficiency with the welas® 1200 sensor

The Promo® 1000 sensors:

The welas ® 1100 and 1200 aerosol sensors[2] are characterized by the fact that a powerful light source and the photomultiplier are directly integrated in the sensor. This technology offers the best size resolution, the best classification accuracy and a low detection limit.

The size of measurement volume is crucial for coincidence-free particle size and particle number measurement.

With measurements in coincidence, the diameter is measured too large and the number too small. Theoretically, for a coincidence-free measurement, i.e. maximum one particle in the measuring volume, at a number concentration of 10^3particles/$cm^3$the measurement volume extension must not be higher than 1 mm^3.

[2]welas® 1100 and 1200 sensors: https://www.palas.de/en//en/product/aerosolsensorswelas1000

Promo® 1000

Benefits

- Measuring range of 120 nm to 40 μm (4 measuring ranges selectable in one device)
- Up to four measuring ranges in only one device:
  - 0.12 μm – 3.5 μm (additionally in welas® 1000 and Promo® 1000)
  - 0.2 μm – 10 μm
  - 0.3 μm – 17 μm
  - 0.6 μm – 40 μm
- Up to 128 size channels per measuring range
- Concentration range from < 1 particle/cm^3 to 5 • 10^5 particles/cm^3
- Calibration curves for different refractive indices
- Very high and reproducible counting efficiency rate starting at 0.12 μm

- High temporal resolution down to 10 ms
- PDAnalyze analysis software
- Calibration, cleaning and lamp replacement can all be performed independently by the customer
- External control by RS 232 or Ethernet
- Optional: Software PDControl for operation as welas® digital available
- Simple operation
- Low maintenance
- Reliable function
- Reduces your operating expenses

Promo® 1000

Datasheet

Parameter	*Description*
Interfaces	USB, Ethernet (LAN), RS232/485, Wi-Fi
Measurement range (size)	0.12 – 3.5 μm, 0.2 – 10 μm, 0.3 – 17 μm, 0.6 – 40 μm
Size channels	Max. 128 (64/decade)
Measuring principle	Optical light-scattering
Measurement range (number C_N)	< 5 • 10^5 particles/cm^3
Time resolution	up to 1 s
Thermodynamic conditions	10 – 40 °C, -100 – 50 mbar
Volume flow	5 l/min, 1.6 l/min
Data acquisition	Digital, 20 MHz processor, 256 raw data channels
Light source	Xenon Hochdrucklampe 75 W
User interface	Touchscreen, 800 • 480 pixel, 7" (17.78 cm)
Power supply	115 – 230 V, 50/60 Hz
Housing	Table housing, optionally with mounting brackets for rack-mounting
Dimensions	185 • 450 • 315 mm (H • W • D) (19")
Weight	Control unit: approx. 8 kgSensor: approx. 18 kg
Operating system	Windows embedded
Data logger storage	4 GB Compact Flash
Software	PDControl, FTControl
Installation conditions	+5 – +40 °C (control unit)

Promo® 1000

Applications

- Determination of the separation efficiency of car interior filters, engine air filters, room air filters, compressed air filters, vacuum cleaner filters, cleanable filters, electrostatic precipitators, oil separators, cooling lubricant separators, wet scrubbers, cyclones and other separators
- Isothermal and isobaric particle size and quantitative determination, for instance in the automobile, chemical, pharmaceutical and food industries
- Analysis of fast, transient processes
- Inspection of smoke detectors
- Particle formation for cloud formation
- Emission measurements
- Immission measurements

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