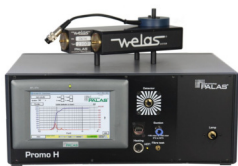
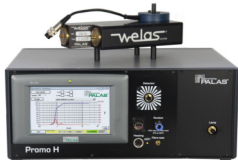


Scattered-light aerosol spectrometer system for process measurement technology and monitoring applications with **light wave conductor technology**

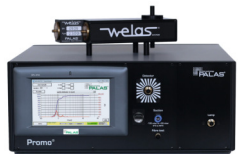
Model Variations



Promo® 2000 H
With heating regulation up to 250 °C for welas® aerosol sensors



Promo® 2000 HP
With automatic regulation of the sampling flow through the welas® aerosol sensors at an overpressure of 2 to 10 bar or in temperatures up to 120 °C



Promo® 2000 P
With automatic regulation of the sampling flow through the welas® aerosol sensors at an overpressure up to 10 bar

Description

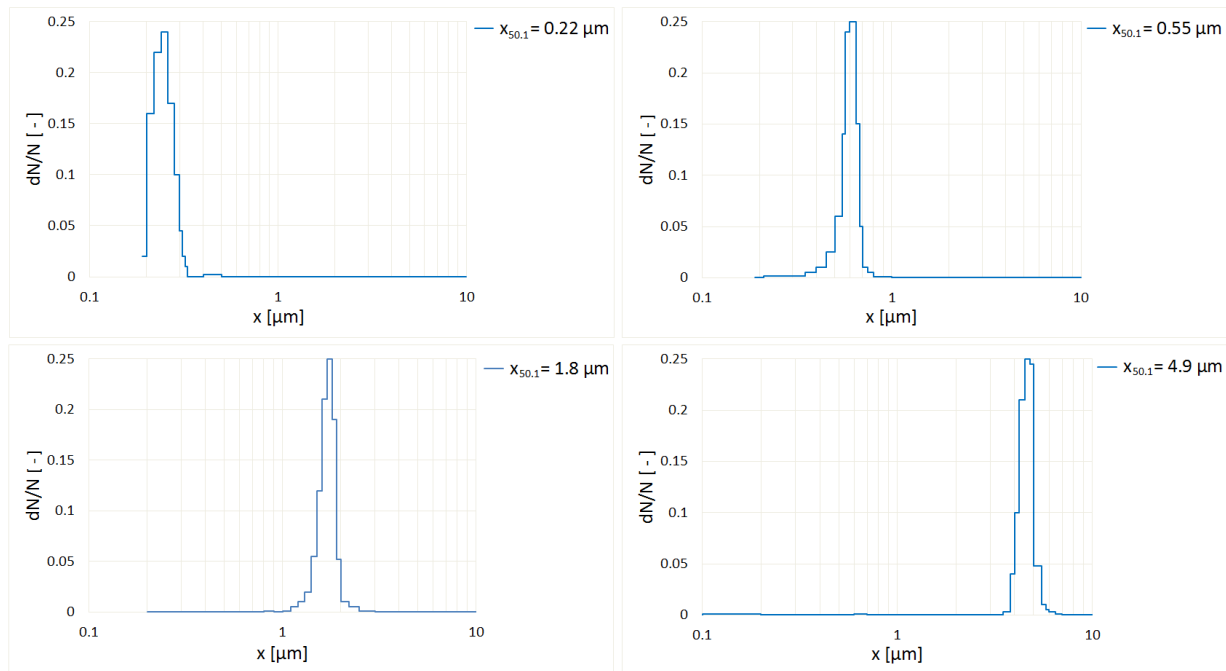
Promo® 2000 is a light-scattering aerosol spectrometer system for particle size analysis and concentration determination that can be equipped with all welas® sensors. On Promo® 2000, the welas® sensors equipped with different measurement volumes, as required, can be easily connected via fiber optic cables and interchanged as required. These sensors allow reliable measurement in the concentration range from $< 1 \text{ particle/cm}^3$ up to $10^6 \text{ particles/cm}^3$ in gases. Please observe the "welas® sensors" product data sheet. Unique are up to four measuring ranges in only one device:

- $0.2 \mu\text{m} - 10 \mu\text{m}$
- $0.3 \mu\text{m} - 17 \mu\text{m}$
- $0.6 \mu\text{m} - 40 \mu\text{m}$
- $2 \mu\text{m} - 100 \mu\text{m}$ (additionally for sensors 2300 and 2500).

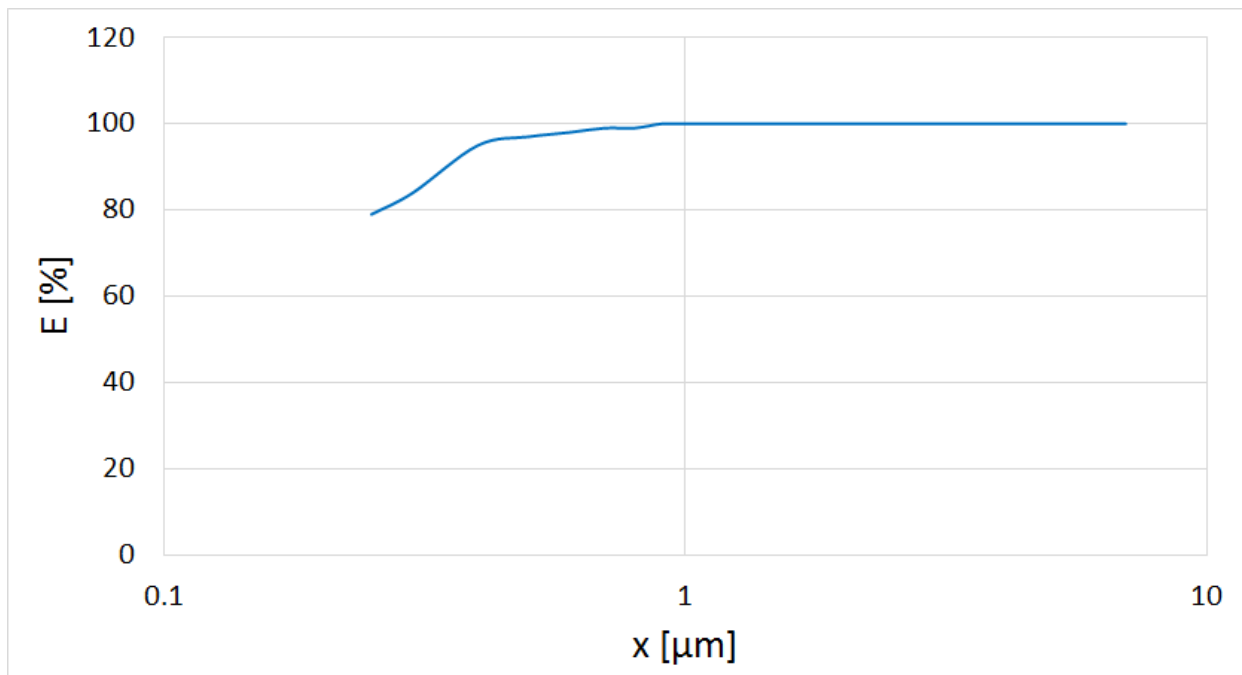
Promo® 2000 is famous for up to 128 size channels per measuring range and a concentration range from $< 1 \text{ particle/cm}^3$ to $10^6 \text{ particles/cm}^3$.

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. With Promo® as a standalone measuring device (i.e. without external computer) measurements are performed continuously. All incoming data can be stored with a maximum temporal resolution of 1 s. Promo® 2000 can therefore measure and save data over weeks independently. For data transfer, Promo® can also be integrated into a company network. Promo® 2000 has a standard interface and can be controlled by a process control system or by a simple Labview program. For this reason, Promo® 2000 **is especially well suited for control and monitoring applications**. Temperature, humidity and pressure sensors can be connected. Palas® offers remote maintenance for the device and data access via www.palas.de/user. **The new Promo® 2000 measurement technology:** Promo® 2000 offers 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 $10^6 \text{ particles/cm}^3$ (welas® 2070 sensor). Also in low concentrations $< 1 \text{ particle/cm}^3$ with the welas® 2500 sensor, this leads to a higher measuring accuracy. **High classification accuracy and high particle 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**



Graph 1: Example with 2200 sensor Promo® 2000 is characterized by its very high counting efficiency starting from 0.2 μm!



Graph 2: Example with 2200 sensor, in relation to LAS-X II **The new Promo® 2000:** The Promo® 2000 is characterized by its optical fibre technology. The welas® aerosol sensor is connected via a fiber optic cable with a length up to 30 m with the Promo control unit. This leads to a minimization of particle losses in long sampling lines by simply installing the sensor directly at the sampling location.

Benefits

- Measuring range of 0.2 to 100 μm (4 measuring ranges selectable in one device)
- Up to four measuring ranges in only one device:
 - 0,2 μm – 10 μm
 - 0,3 μm – 17 μm
 - 0,6 μm – 40 μm
 - 2 μm – 100 μm (additionally for sensors 2300 and 2500)
- Up to 128 size channels per measuring range
- Concentration range of 1 particle/ cm^3 to 10^6 particles/ cm^3
- Calibration curves for different refractive indices
- Very high and reproducible counting efficiency rate starting at 0.2 μm
- **Pressure-resistant up to 10 bar (optional)**
- **Heatable to 250 °C (optional)**
- Optical fibre technology
- Simple operation with a large touch display
- Calibration, cleaning and lamp replacement can all be performed independently by the customer
- External control by RS 232 or Ethernet
- With analysis software PDAnalyze
- Optional: Software PDControl for operation as welas[®] digital available
- Low maintenance
- Reliable function
- Reduces your operating expenses

Datasheet

Parameter	Description
Interfaces	USB, Ethernet, RS232/485, Wi-Fi
Measurement range (size)	0,2 µm – 10 µm, 0,3 µm – 17 µm, 0,6 µm – 40 µm, 2 µm – 100 µm
Size channels	up to 128 (64/decade)
Measuring principle	Optical light-scattering
Measurement range (number C_N)	< 1 • 10 ⁶ particles/cm ³
Volume flow	5 l/min
Data acquisition	20 MHz processor, 256 raw data channels, digital
Light source	Xenon arc lamp 35 W
Power consumption	100 W
User interface	Touch screen, 800 • 480 pixel, 7"
Housing	Table housing, optionally with mounting brackets for rack-mounting
Dimensions	185 • 450 • 315 mm (H • W • D) (19")
Support options	Direct remote access, Palas [®] webserver service
Weight	approx. 8 kg (control unit), approx. 2.8 kg (sensor)
Operating system	Windows embedded
Data logger storage	4 GB Compact Flash
Software	PDControl, FTControl, PDAnalyze
Installation conditions	+5 – +40 °C (control unit)

Applications

- Emission monitoring of installations
- Control of grinding and classification processes
- Monitoring of production processes in the food, pharmaceuticals and chemicals industries
- Testing of complete filters, inertial and wet separators or electrostatic precipitators

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