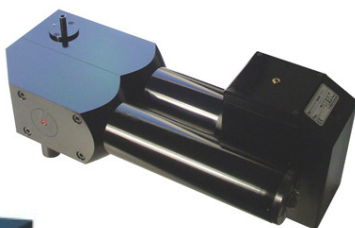


The welas® sensors for the welas® digital system and Promo®



Sensor series 2000

Sensor series 1000



Sensor 27300

Palas® offers the worldwide largest selection of different sensors for the operation at the light-scattering spectrometer systems welas® digital and Promo.

welas® sensors are available for the particle measurement in gases and in liquids.

The welas® sensors are optimised for particular particle concentrations with measuring volumes of different sizes for a coincidence-free measurement. Thus a high particle counting rate and thereby a good statistical security in concentration ranges of $<1 \text{ P/cm}^3$ up to 10^6 P/cm^3 are achieved.

The trouble-free and reliable measurement of large particles up to $40 \mu\text{m}$ in the sensor is guaranteed by the vertical aerosol duct at a high volume flow of 5 l/min and a large aperture area.

Pressure-resistant and heatable aerosol sensors

Special measuring cuvettes make the use of the welas® aerosol sensors possible, also under exceptional measurement conditions. These are available:

- heatable up to 250°C ;
higher temperatures on request
- pressure-resistant up to 10 bar overpressure
- resistant to chemically abrasive media



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Particular advantages:

- The sensors are simply exchangeable
- The world's smallest and most robust sensors of the series 2000
- Very good conformity of all sensors regarding particle size and particle concentration (see Diagram 1)
- Minimization of particle losses in long sampling lines by simple installation of the sensor directly at the sampling place
- Sensors for in-situ measurements
- Measurement in explosive environment with the series 2000 (without heating)
- Fast and simple cleaning
- Easy handling
- Reliable function
- Low maintenance
- Reduce your operating expenses

Application examples:

- Separation efficiency determination of car interior filters, engine air filters, inside air filters, compressed air filters, vacuum cleaner filters, cleanable filters, electric filters, oil separators, cooling lubricant separators, wet separators, cyclones and other separators
- Isothermal and isobaric particle size and quantity determination, e. g. in the automotive, chemical, pharmaceutical and food industry
- Analysis of fast transient processes
- Testing of smoke detectors
- Particle measurement for clouding processes
- Emission measurements
- Immission measurements

Technical parameters:

Sensors with light-wave conductor technology:

• Sensors series 2000:

- Measuring range: $0.2 \mu\text{m} - 105 \mu\text{m}$
- Weight: 2.8 kg
- Dimensions (WxHxD): $250 \times 50 \times 100 \text{ mm}$
- Suction volume flow: 5 l/min (others on request)

• Sensors series 27300:

- Measuring range: $0.5 \mu\text{m} - 40 \mu\text{m}$
- Weight: 12 kg
- Dimensions (WxHxD): $470 \times 260 \times 150 \text{ mm}$
- Volume flow: for in-situ measurements in tube up to approx. $\varnothing 100 \text{ mm}$; depending on the tube \varnothing

Sensors without light-wave conductor technology:

• Sensors series 1000:

- Measuring range: $0.12 \mu\text{m} - 40 \mu\text{m}$
- Light source: Xenon high pressure 75 W
- Power supply: 115/230V; 50/60 Hz
- Cooling: Water cooling
- Weight: 19 kg
- Dimensions (WxHxD): $530 \times 200 \times 530 \text{ mm}$
- Suction volume flow: 5 l/min (others on request)

Accessories:

- transportation case
- cleaning kit
- cuvette key

The welas® Sensors

Quality in detail



Conformity of the sensors

The welas® sensors are characterized by a particularly good conformity of counting efficiency rate and particle size resolution.

Thus the measurement results are perfectly comparable using different sensors.

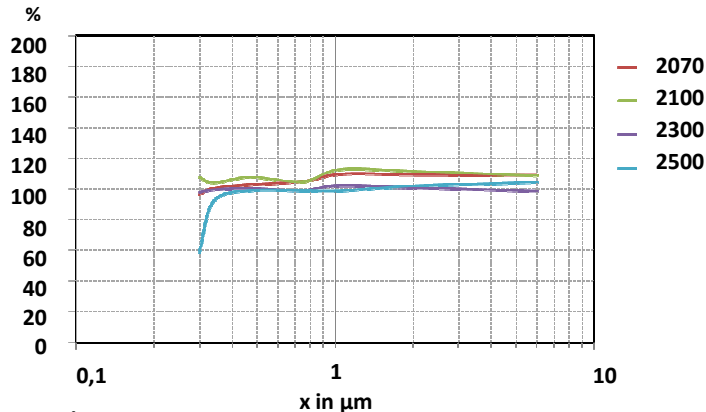


Diagram 1:
Counting efficiency rate of different sensors related to welas® sensor 2200 (in measurement range 0,2 – 10 µm)

Size limitation of the optical measuring volume

The below-mentioned table shows the theoretical minimum distance of the particles at a given number concentration.

At a number concentration of 10^3 per cm^3 the optical measuring volume may therefore not be larger than 1 mm.

Number concentr. [P/m³]	Number concentr. [P/cm³]	Particle distance [cm]	Particle distance [mm]	Particle distance [µm]
1	10^{-6}	100	1000	
10^3	10^{-3}	10	100	
10^6	1	1	10	
10^9	10^3		1	1000
10^{12}	10^6		0,1	100
10^{15}	10^9		0,01	10
10^{18}	10^{12}		0,001	1

Overview of the available welas® sensors:

The sensors of the series 1000 can be combined with the welas® digital 1000 System.

The sensors of the series 2000 and 27300 can be combined with the welas® digital 2000/3000 System and Promo.

Aerosol sensors	C_{max} [P/cm³]	Particle size ranges [µm]				
welas® 1100	500.000*	0,12-3,5	0,2-10	0,25-17	0,6-40	Series 1000
welas® 1200	50.000*	0,12-3,5	0,2-10	0,25-17	0,6-40	

Series 1000 optionally available: pressure-resistant up to 10 bar (sensortype ending P) and additionally heatable up to 120°C (sensortype ending HP)

welas® 2070	1.000.000*	0,2-10	0,3-17,5		0,6-40	Series 2000
welas® 2100	500.000*	0,2-10	0,3-17,5		0,6-40	
welas® 2200	80.000*	0,2-10	0,3-17,5		0,6-40	
welas® 2300	40.000*	0,2-10	0,3-17,5	0,6-40	2-105	
welas® 2500	4.000*	0,3-17,5	0,6-40		2-105	

Series 2000 optionally available: pressure-resistant up to 10 bar (sensortype ending P), additionally heatable up to 120°C (sensortype ending HP) and heatable up to 250°C (sensortype ending H)

Spezialsensor welas® 27300	80.000*	---	0,5-17,5	1-40	Sensor 27300
Sensor for particles in liquids	C_{max} [P/ml]	Particle size ranges [µm]			
welas® 2100 FL	100.000	0,7-40 µm			Sensor 2100 FL

*only with welas® digital system. For former welas® systems, C_{max} must be divided by 5.

The technical data on this sheet are for information only.
They are subject to change without notice. V0020312

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