



Laser particle size analyzers SALD-2300

The SALD-2300 analyzer allows you to determine the size of particles from 17 nm to 2500 μm and is an important tool in quality control laboratories of electronic, pharmaceutical, cosmetic, food, paint and other industries.

The SALD-2300 main unit is equipped with a flow or capacitive cell, or a unit for working with highly concentrated samples for the analysis of liquid samples and a «Cyclone» injection device for the analysis of powders.

«WingSALD» software

Along with the libraries of known samples and the possibility of calculation according to Fraunhofer, the function of selecting refractive indices for any objects, including previously unstudied mixtures, is included.



SALD-2300 with a flow cell

«Wet» dimension:

Flow cell The SALD-MS23 comes complete with a sampler that circulates samples with a high specific gravity (ceramics, metal powders) without allowing particles to settle at the bottom of the sampler (particles with a density of up to 7.8 g/cm³), and the ultrasonic disperser ensures the removal of air bubbles. The volume of liquid in the sampler can be set to 100, 200 or 300 ml.

Capacitive cell SALD-BC23 is made of quartz glass and equipped with a fluoroplastic funnel. The cell is used to work with samples containing aggressive liquids or organic solvents. The volume of the cuvette is 12 ml, the required amount of sample for measurement is 7-10 ml. Equipped with a stirrer.

Block for working with highly concentrated samples SALD-HC23

For correct measurement, samples with a concentration of measured particles from tens of ppm to 0.1% are usually used to avoid secondary light scattering in samples with a high concentration of particles.

Dilution does not always solve the problem of high concentrations. Many suspensions and emulsions (ointments, creams, latexes, some types of paints) delaminate when diluted or agglomerate the original particles in them. The Shimadzu company offers a unit for working with highly concentrated samples. It is a holder of glass plates, between which a sample with a layer thickness of several microns is contained. This allows you to measure samples with a particle concentration of up to 20%, as well as work with ultra-small sample quantities of approximately 15 µl.

«Dry» measurement:

Cyclone-type injection device SALD-DS5 «Cyclone» has specially designed injection nozzles that effectively break up agglomerates present in the powder, which reduces the impact of agglomeration on the final result. With the help of the «Cyclone» injection device, it is possible to measure the size of particles not only of an organic nature (that is, with a low specific gravity), but also of metal powders and their oxides.

Technical characteristics Model SALD-2300

Main unit SALD-2300	
Measurement method	Laser diffraction
Range of measurements	17 nm - 2500 µm
Radiation source	Red semiconductor laser (680 nm)
Sensors	84 elements (78 elements front, 1 side, 5 rear)
Power supply	115/230; 50/60 Hz
Dimensions (L x W x H) and weight	68 x 28 x 43 cm; 31 kg
Sampler SALD-MS23	
Range of measurements	17 nm - 2500 µm
A vessel for dispersion	Volume 100-280 cm ³
Mixer	Blade, with adjustable rotation speed
Ultrasonic disperser	32 kHz, output power 40 W
Liquid pump	Centrifugal pump, max. feed speed 2000 cm ³ /min
The material of the contacting surfaces of the pump	Stainless steel (SUS304, SUS316), tetrafluoroethylene (PTFE), perfluoroelastomer (FEP) or Kalrez®, Thermoflon Pascal
Pump for supplying liquid	Diaphragm pump, max. feed rate 750 cm ³ /min
The material of the pump for supplying liquid	Tetrafluoroethylene, polyvinylidene fluoride (PVDF)
Power supply	115/230 V alternating current, 200 VA
Dimensions (L x W x H) and weight	39 x 52 x 43 cm; 18 kg
Material of the flow cell	Quartz glass
Capacitive cell SALD-BC23	
Range of measurements	17 nm - 400 µm
Sample quantity	12 cm ³
Material	Quartz glass
Mixer	Shovel, with vertical movement
Unit for working with highly concentrated samples SALD-HC23	
Range of measurements	30 nm-280 µm
Sample quantity	15-150 µl
Material	Borosilicate glass
Sample concentration range	10 ppm - 20%
Measuring block (dry) injection type SALD-DS5 «Cyclone»	
Range of measurements	0.3-2500 microns
Sample quantity	1-10 ml
Sample delivery system	Cyclone device
Dispersion block	Ejector (3 types of nozzles)
Power supply	230 V AC, 100 VA (not including dust collector and compressor)
Dimensions (L x W x H) and weight	24 x 31 x 21 cm; 10 kg

SALD-7500nano

- SALD-7500nano is an accurate and highly sensitive instrument for measuring in the area of ultra-low or high concentrations. An excellent solution for research in the field of nanotechnology and virtual lives.



- The use of one laser in the optical scheme reduced the analysis time to 1 second. This allows for real-time measurements at 1-second intervals.

Features of the model:

- Measurement of concentrations from 0.1 ppm to 20%
- Minimum analysis time 1 second
- Does NOT require large amounts of sample for measurements (from 15 µl!)

Technical characteristics Model SALD-7500nano

Main unit SALD-7500	
Measurement method	Laser diffraction
Range of measurements	7 nm - 800 µm
Radiation source	Semiconductor UV laser (405 nm)
Photodetector for ultraviolet laser	84 elements (78 elements front, 1 side, 5 rear)
Dimensions (L x W x H) and weight	68 x 28 x 43 cm; 32 kg
Sampler SALD-MS75	
A vessel for dispersion	Volume 100/200/300 cm ³
Mixer	Blade, with adjustable rotation speed
Ultrasonic disperser	32 kHz, output power 40 W
Liquid pump	Adjustable centrifugal pump, max. feed rate 2000 cm ³ /min
Material of the pump contact surfaces	Steel SUS304, SUS316, tetrafluoroethylene, perfluoroelastomer.
Pump for supplying liquid	Diaphragm pump, max. feed rate 750 cm ³ /min
Dimensions (L x W x H) and weight	39 x 52 x 43 cm; 18 kg
Flow cell	Quartz glass
Capacitive cell SALD-BC75	
Material	Quartz glass
Volume	About 5 cm ³
Mixer	Shovel, with vertical movement and adjustable speed
Unit for working with highly concentrated samples SALD-HC75	
Material	Borosilicate glass
Volume	About 0.015 cm ³

Aggregates Sizer

Special Shimadzu solution based on SALD-7500

- Intended for the study of aggregation processes of biopharmaceuticals.
- Aggregates Sizer is an aggregation analysis system that allows quantitative assessment of particles in the SVP range in the form of concentration (µg/ml).



Measurement method	Laser diffraction
Measurement range	Particle size distribution: from 7 nm to 800 µm
	Display concentration in the range from 40 nm (0.04 µm) to 20 µm
Range of measured concentrations	Particles with a size of 100 nm: from 2 mg/ml to 12 mg/ml
	Particles with a size of 1 µm: from 0.5 mg/ml to 10 mg/ml
	Particles with a size of 10 µm: from 10 mg/ml to 180 mg/ml

Nanoparticle size analyzer

IG-1000 Plus

The unique IG-1000 Plus nanoparticle size analyzer allows measurements in the nano- and sub-nano range. The revolutionary measurement method created by Shimadzu enables the measurement of nanoparticle sizes in the range of 0.5 to 200 nm with high precision in a simple and efficient way.

The induced grid (IG) method is used for the analysis: an alternating voltage is applied to electrodes located in a special way and placed in a medium with dispersed particles. As a result, a certain arrangement of particles in the liquid is created, the so-called induced diffraction grating. If the voltage supply is stopped, the particles diffuse and the diffraction gratings disintegrate. The sensors register the change in light intensity when the gratings break down, which allows you to obtain data on the size distribution of particles. The method allows obtaining a good signal-to-noise ratio even in the nanoparticle range, making stable measurements with good reproducibility possible.



Resistance to pollution

Contamination of the original sample does not significantly affect the measurement results. Even if the sample is mixed with some foreign particles, the information about the analyzed particles is recorded reliably. It is not necessary to filter samples to remove large particles.

High reproducibility

The measurement method (IG) guarantees high reproducibility and obtaining stable data and therefore eliminates unreliability and inaccuracy in the analysis of particles in the nanoregion. This is especially important when analyzing particles smaller than 10 nm.

Technical characteristics Model IG-1000 Plus

The principle of measurement	Method of induced lattice IG	
Measurement range	from 0.5 to 200 nm	
Measurement time	30 s (from the beginning of the measurement to the display of the results)	
Volume of liquid sample	from 250 to 300 µl	
Measurement block	Light source	Semiconductor laser (785 nm wavelength, 3 mW output signal)
	Radiation receiver	Photodiode
	Focus	Capacitive (Pyrex glass material*)
Output connector	Serial output (connector type D-Sub, 25 pin, external)	
Terms of use	Temperature: 15–35 °C	
	Humidity 20-80% (without condensation)	
Power supply requirements	100 V/115 V/230 V ±10%, AC, 50/60 Hz	
Dimensions (WxDxH, mm) and weight	600*400*200 mm, approx. 15 kg	

Measurement is possible as long as the conductivity of the liquid sample does not exceed 400 µS/cm (microsiemens per centimeter).

(For example, saline and seawater cannot be used for measurement without extensive dilution).

* Do not use solutions that can destroy pyrex glass.



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