

HORIBA

Dynamic Light Scattering Particle Size Distribution Analyzer LB-500



At Last, Routine Particle Size Distribution Measurement Enters the realm of the Nanometer

Horiba has refined its expertise in developing state-of-the-art particle size distribution measuring equipment for more than 20 years. Building on this wealth of experience and technology, we have developed the LB-500 Dynamic Light Scattering Particle Size Distribution Analyzer. Advanced application of dynamic light scattering theory has enabled HORIBA to reach a wide measurement range, spanning from the infinitesimal 3 nm, up to 6 micro meter. The handy cell-type system and user-friendly software combine to bring you remarkable ease of operation. In addition, the unit provides excellent capabilities for monitoring effects due to temperature and concentration of the sample, making the LB-500 ideally suited for both quality control and research applications.

Point 1: High accuracy measurement of microscopic particles

Point 2: Measurement of a wide range of sample concentrations and at concentrations near or equal to that of the original dispersion

Point 3: Outstanding ease of operation

Efficient, easy to use cell-type system. Optimal performance in measuring valuable or extremely small samples.

Point 4: Feature-Loaded Software

Many new features have been included in the software, such as 3D display, learning, on-line help, print layout, and a cell check, among others.

Recommended for Customers:

- Already using dynamic light scattering particle size equipment who need to measure high concentration samples.
- Already using laser diffraction or dynamic light scattering particle diameter distribution measuring equipment who need to measure smaller size particles than possible on the equipment currently being used.
- Working in fields for which a micron sized particle is already considered to be a "large" particle.
- Who want to know the variation in cohesion of distributed particle diameter vis-a-vis concentration strength.
- Who want to know the change in sample properties vis-a-vis temperature.

Applications:

- Advanced Materials Science, R&D, Quality Control
- Abrasive slurries such as CMP and diamond
 - Carbon black
 - High resolution ink
 - UV blocking cosmetics (foundation, emulsions, etc.)
 - Inks etc.
 - Paints, dyes and pigments
 - Latexes



Supporting Simplicity, Accuracy, and Unmatched ease of operation

The cell-type system is optimal for measuring precious experimental materials or extremely small samples



An easy to use cell-type system has been adapted for use as the sample-holding vessel (a rectangular glass container). Simply pour the sample solution into the cell and it is ready

to be measured with full accuracy. A 2 cc quantity of sample dispersion is sufficient. What's more, the dispersion can be reclaimed after measurement, preserving valuable samples. Optional unit provides greater accuracy through precise temperature control. In order to allow measurement of samples whose size distributions are sensitive to temperature changes, the temperature of a sample can be adjusted via a heater or an electronic cooler (temperature adjustable model). Compared to the temperature bath controlled type, the data sampling function is much smoother. The temperature can be effectively controlled in the 20-70°C range.

Software Flexibility, Versati

Frequently Used Data Lists and Function-Click once and Measure

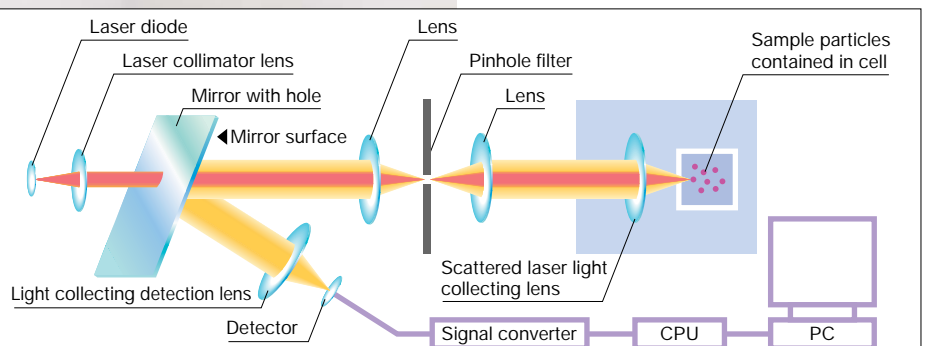
Properties of the dispersion medium required for measurement, such as refractive Index, viscosity calculation formula, etc. are stored in advance in list format. When you are ready to make a measurement, just select the name of the dispersion medium from the menu.



Applied Dynamic Light Scattering Theory allows measurement f

Applying "dynamic light scattering" theory, we bring you measurement capability over a wide range, from 3 nm to 6 μm. Moreover, the time required from the start of the measurement to the displaying of the results is a speedy 2 minutes.

Able to Handle High-Concentration Measurements, and a Wider Range of Dispersion Concentrations



LB-500 Optics System

Light irradiated from a laser is passed through a lens and focused onto particles contained in the cell. The focal point of the lens is positioned on the inner wall of the cell, concentrating maximum light in order to suppress multiple-dispersions' that occurs when high concentration dispersion are measured. In addition, a pinhole filter removes errant beams,

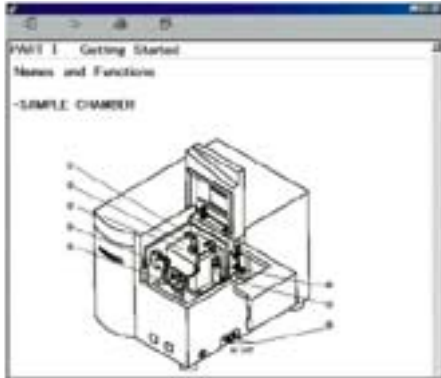
assuring that only light scattered from the focal point will be sent to the detectors. A signal is generated corresponding to the Brownian movement (vibration) of the particles. The frequency of a particle's vibration is dependent on number of factors including the size of the particle. Through analysis of the frequency component, the particle size distribution can be determined.



ility at Your Fingertips

On-line Help Function allows you to check operating procedures, functions and data quickly

Find refractive index data for 1500 sample types and 800 types of dispersion media, in addition to operation procedures, quickly and easily using the on-line help function.



PART 8. OPERATION

LIST OF THE REFRACTIVE INDEX VALUES

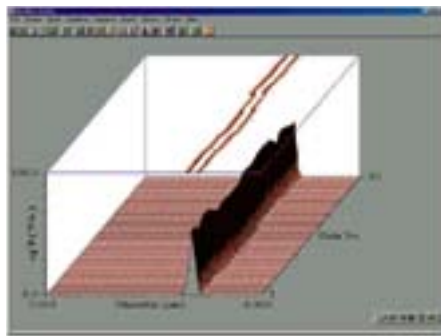
Material	Dispersion	Optical Base	Wavelength
Water			400
Water			450
Water			500
Water			550
Water			600
Water			650
Water			700
Water			750
Water			800
Water			850
Water			900
Water			950
Water			1000
Water			1050
Water			1100
Water			1150
Water			1200
Water			1250
Water			1300
Water			1350
Water			1400
Water			1450
Water			1500

One-click Automated Operation Streamlines Routine Workloads

Parameter settings necessary for measurement and operation procedures can be registered in advance, enabling one-click automated operations. The learning wizard provides convenient entry for data and operation procedures.

With 3D Display of Related Data, Changes are readily detected at a glance

Comparative measurement results as well as variations in agglomeration due to changes in temperature, can be viewed via the 3D display. The Real Time display makes changes in position readily detectable at a glance.



The Print Layout Function Provides Easy Format Customization for Reports

Graphs, measurement results, etc. can be arranged as you like on the display screen. There is also a function enabling the insertion of a company name and logo. Measurement data reports can be presented clearly and professionally to meet your every need.

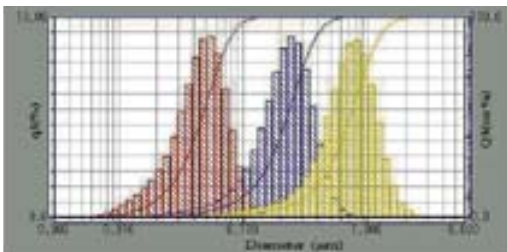
Layout screen

Output example

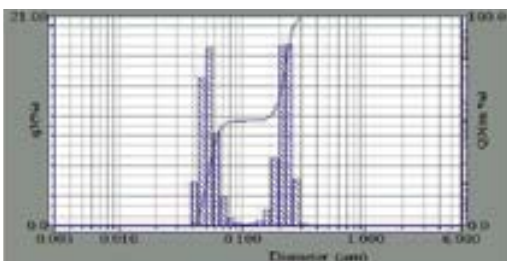
from Nanometer-to-Micron Range

Allows for The Measurement of Samples of Inks, Paints and other Particles with Pronounced Color Properties

High Accuracy Measurements over a Wide Range of Particle Sizes



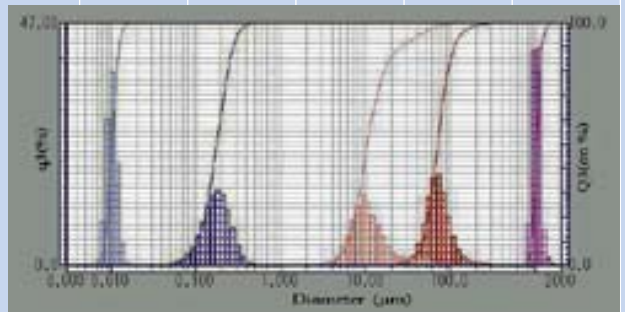
Able to measure red, blue, and 3 types of yellow inks without dilution.



0.05 μm and 0.2 μm polystyrene latex compound sample. Sample mixture was analyzed precisely and separated into 2 peaks.

Combines with the LA Series to Form a System Covering the Full Range of Particle Sizes for Particle Diameter Distribution Measurement

The LB-500 can be combined with the LA series (920 and 300) laser diffraction/light scattering particle diameter measurement equipment to form a system. When combined with the LA-920, the resulting system covers the full range of particle diameters between 3 nm and 2 mm. Data from both units can be read into the computer simultaneously and comparative measurement data displayed on a single screen.



Measurement Range for the LB-500



Measurement Range for the LA-920 (laser diffraction/light scattering)

1nm 10nm 100nm 1 μm 10 μm 100 μm 1mm 2mm

Measurement Results Screen

Calculation results

Data table

Memory graph



Measurement results data

Particle diameter dispersion graph

Measurement Screen

Real time sample concentration display

Simple particle diameter distribution graph

Automatic check for cell contamination

