

# HORIBA

Explore the future

Laser scattering particle size distribution analyzer

## LA-300



# The LA-300 Particle Size Analyzer

You asked for "affordability," "easy use," and "compact size" without compromise in quality, and HORIBA has responded with the LA-300. The LA-300 boasts the superior technology that research and QA personnel around the world have come to expect from HORIBA, in a unit that strikes a harmonious balance between high-functionality, easy operation and low maintenance, and is cost-effective. What's more, it's all available in a new compact size that is sure to complement any busy laboratory.

HORIBA has succeeded in decreasing the size by nearly 30% without forfeiting quality in the least. In addition to the capability to analyze a wide variety of materials, the LA-300 employs an analysis method that dramatically decreases measurement time while yielding results with high accuracy. Furthermore, it is equipped with a security feature for ensuring that proper methods in quality assurance are followed.

With the high performance, superior accuracy and high level of efficiency obtainable with the LA-300, one might expect its operation to be extremely complex. Thanks to this model's easy operation and low maintenance design, that worry can be put to rest.



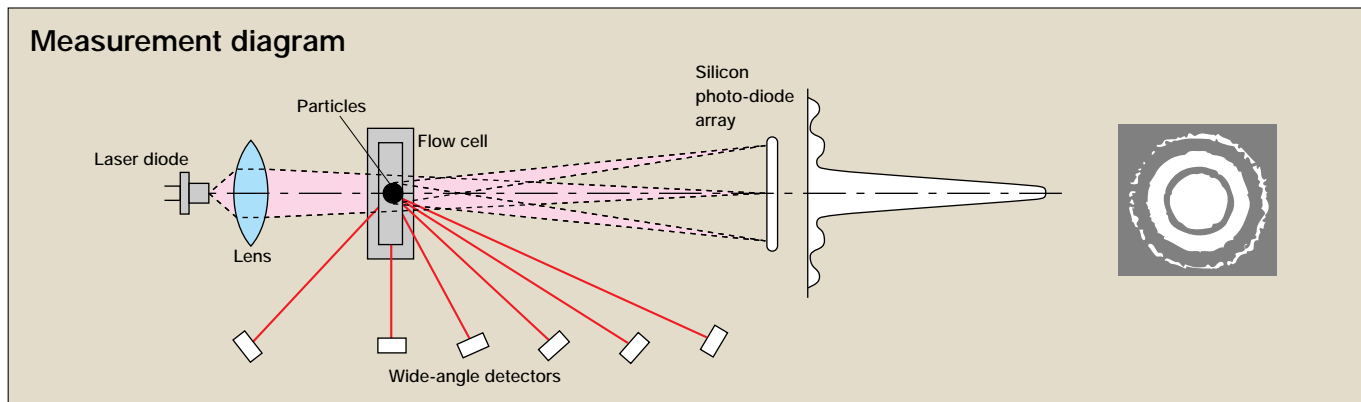
# HORIBA's premium design in an economical package

## High performance achieved in a compact size

The LA-300's revolutionary size makes it a welcome change to the other large and cumbersome designs, but rest assured that when it comes to performance, the LA-300 ranks right up there with the big guys.

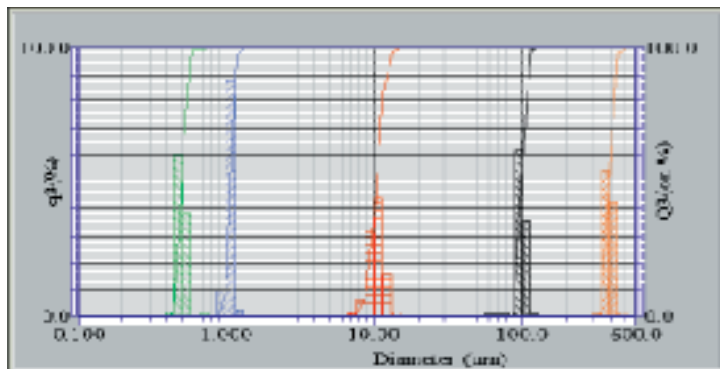
A centrifugal pump system with an ultrasonic chamber makes it possible for measurements to be carried out at the same time as dispersion. Real-time displays of particle size distribution and sample concentration let the user check sample at all times. Maintenance is substantially reduced thanks to a strong centrifugal pump that resists residue buildup.

Using a diode laser, the LA-300 measures particles ranging anywhere between 0.1 and 600  $\mu\text{m}$  in diameter with unprecedented precision, and processes high-resolution data for display within 20 seconds. The wide measurable range makes it ideal for application in fundamental studies and quality control of production lines in such diverse fields as pharmaceuticals, fine ceramics, metal powders, polymers, pigments, paints/coatings, adhesives, catalysts, minerals and clays, just to name a few.



Measurements are performed in the LA-300 using a 650-nm laser diode (5mW). Six wide-angle detectors and a 36-channel ring-shaped silicon photo-diode array detector, which act as receptors for light refracting off of particles suspended in the flow cell, allow the LA-300 to process 42

data signals at once. Electrical signals corresponding to the intensity of the scattered light are used to calculate the size distribution of the particles. Based on the Mie scattering theory, this measurement method consistently yields superior repeatability with astounding precision.



An example of the high-resolution readouts made possible with the 42-channel silicon photo-diode detector.

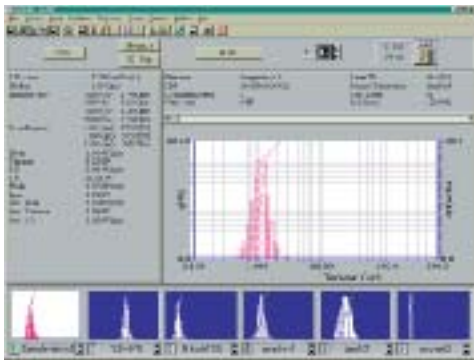
The above readouts were obtained from five separate analyses.

# r — HORIBA's premium design in an economical package

## Designed for easy operation and maintenance

The software for the LA-300 offers extremely easy operation and low maintenance. A number of labor-saving features designed to facilitate operation are incorporated into the LA-300's application software.

A graphic user interface provides clear and concise dialog boxes, so performing operations requires little more than selecting the desired command buttons. Also included in this version are shortcut keys, convenient when performing main operations, and a window for quick assessment of memory availability.



### Auto-alignment

Thanks to a built-in auto-alignment function, the LA-300 is able to achieve high repeatability. This feature not only consistently maintains the ideal operation condition, but self-calibrates with the touch of a button, determining whether photo-diodes require re-positioning and adjusting them accordingly.

## Multi-functionality at your fingertips

### Security Feature

The LA-300's software application includes a window that allows the System Administrator to assign user-defined access for various LA-300 operations. The System Administrator can specify the attributes of user categories, as well as customize individual user IDs. User access is based on user name and password input, and can be limited to operations ranging from simply launching and closing the application, to more high-level functions, such as programming the LA-300's learning function, Learning Wizard.

### Sequential Operation Wizard

Built into the LA-300 is HORIBA's unique operation function, Sequential Operation Wizard, which helps save time and labor when performing routine analyses. Once the user programs the desired measurement conditions and operation sequence into Sequential Operation Wizard, using an easy-to-follow graphic user interface, the recorded measurement sequence can be activated by just clicking on the appropriate button.

### Print Layout

The Print Layout program in the LA-300 lets users perform custom layouts, complete with scaling and editing capabilities, for data output. Unlike most applications of this type, that offer a single printing format, the Print Layout application lets users edit the content, size and layout for displays of measurement conditions, graphs, results and other output data. Since a number of output formats can be saved, the format most appropriate for a particular print can be specified with ease. A preview screen is also provided so data can be viewed as it will be printed out.



### Low Maintenance

The LA-300's internal centrifugal circulation pump, for use with aqueous solutions, virtually eliminates the necessity for pump replacement since it is very difficult for powder residues to accumulate.

## Additional features for meeting a variety of demands

### Windows 98 Support

The LA-300 supports both Windows 95 and Windows 98. Now, data retrieved through a search program, for example, can be converted for processing in EXCEL and other Windows applications.

### Flexible Data Processing

Various data processing options are provided to help you get the results you need. Among them is a graph display option that lets the user select to display a cumulative distribution graph, as well as selections for specifying histogram spacing, and how axes are to be displayed. Users can even choose to output to spreadsheets, or have graphs converted into bitmap or metafiles.

# Production-boosting options

For options that allow measurement of non-aqueous solutions, contact HORIBA directly.



## Autofill pump

This automatic fluid supply unit saves time and labor by automatically supplying the measuring unit with the sample fluid. It also provides automatic filling, rinsing of the fluid circulation system.



## Fraction cell/cell holder

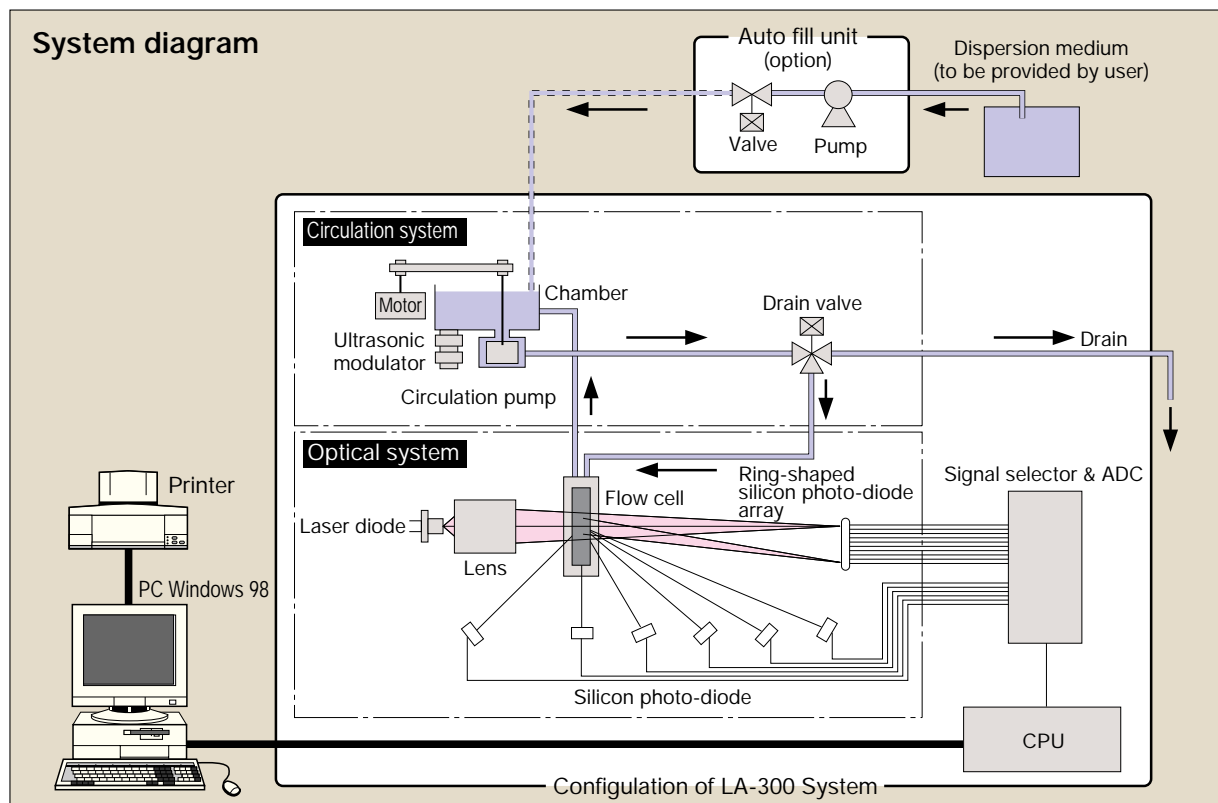
This unit is perfect for measuring very valuable or extremely small or hazardous samples. It allows liquid suspensions as small as 5 ml to be measured.



LA-300 with Autofill pump



## System diagram



# Specifications

## LA-300 laser scattering particle size distribution analyzer

Principles of Measurement: Based on Mie scattering theory

Range of Particle Size Displayed: 0.1 to 600µm

Measurement Time:

Approximately 20 seconds, from start of measurement to display of data

Amount of sample required for measurement:

10 mg to 5 g  
250 mL of dispersant aqueous\* fluid when using the flow cell (differs with test samples)

Optical System:

Light source: 650-nm Laser diode, 5 mW  
Photo-cell detector: 36-division ring shaped silicon photo-diode forward detector array and 6 separate wide-angle silicon photo-diodes

Sample Recirculation System:

Ultrasonic chamber, 15 W, 28 kHz  
Centrifugal pump, discharge volume 5.5 L/min (in case of distilled water), 15-step speed selection  
Sample flow cell, Tempax® glass

Power: 100/120/230 VAC ± 10%,  
50/60 Hz, 150 VA

Communications: RS-232C

Proper Operation Temperature and Humidity:

15°C (59°F) to 35°C (95°F) less than 85% RH (no condensation)

External dimensions: 296 (W) x 420 (D) x 320 (H) mm  
11.7 (W) x 16.5 (D) x 12.6 (H) in

Weight: Approximately 25 kg, 55 lb

Data processing, operating unit:

PC compatible computer running under PC/Windows 95 or Windows 98  
Printer  
Monitor

## Options

Fraction cell and cell holder

Cell material: Tempax® glass

Cell volume: 5 mL

Autofill pump

Flow rate: More than 1.2 L/min

Power: AC 100/120/230V ± 10%, 50/60 Hz, 80 VA

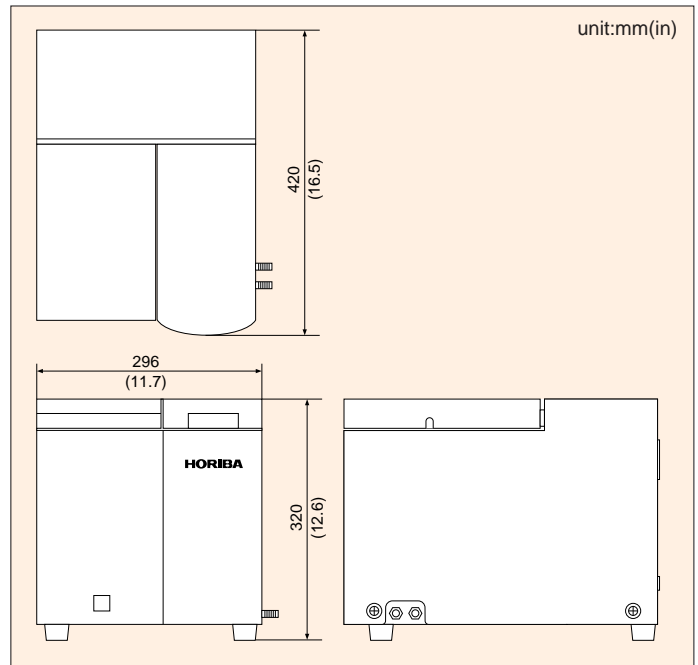
External dimensions:

165 (W) x 340 (D) x 320 (H) mm

6.5 (W) x 13.4 (D) x 12.6 (H) in

Weight: Approximately 10 kg, 22 lb

## External dimensions



Class 1 laser product

\* Contact HORIBA directly about options for use with non-aqueous solutions.

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**Horiba continues contributing to the preservation of the global environment through analysis and measuring technology.**



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