HORIBA proudly introduces the newest breakthrough in particle size technology.

Laser Scattering Particle Size Distribution Analyzer Partica LA-960

This latest evolution in the LA series advances scientific knowledge for tomorrow’s world through intuitive software, unique accessories, and high performance. The LA-960 continues HORIBA’s proud tradition of leading the industry with innovative design.
HORIBA's Original Optical Design

HORIBA's ground breaking optical design perfects the static light scattering particle sizing technique.

**Advanced Detector Design**

The number of detectors, angular range, and layout each contribute to overall system performance. The LA-960 uses 87 logarithmically spaced silicon photodiode detectors covering a range of 0.006 - 165.7 degrees to measure complete particle size distributions.

**Automatic Laser Alignment in Seconds**

Always make perfect measurements with computer-controlled laser alignment. The alignment process is finished in only a few seconds with HORIBA's innovative approach.

**Superior Instrument-to-Instrument Precision**

The LA-960 is designed and built to provide the same experience regardless of manufacture date, operator skill, or geographic location. Achieve unmatched instrument agreement without the hassle of correlation.

**Guaranteed Accuracy and Precision**

The LA-960 is a highly refined particle size analyzer capable of accurately measuring NIST-traceable size standards within 0.6% of specification. Fully compliant with ISO 13320 recommendations regarding the measurement of materials on the D10, D50, and D90.

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**MiniFlow Circulation System**

- **Feature**
  - The MiniFlow minimizes sample and dispersant amounts. This miniaturized circulation system features fill and circulation pumps, ultrasonic probe, and drain valve for fully automated operation.

- **Typical Applications**
  - Precious samples requiring powerful dispersion
  - Materials requiring hazardous dispersants
  - Size range: 10nm - 1000μm

**Fraction Cell**

- **Feature**
  - The Fraction Cell makes measurements with only micrograms of sample. This unique accessory is available in 5, 10, and 15 mL volumes and is fully solvent resistant.

- **Typical Applications**
  - Precious samples requiring minimal dispersion
  - Drug discovery
  - Cost-conscious users

**Paste Cell**

- **Feature**
  - The Paste Cell measures samples which cannot be diluted or which are dispersed in a viscous medium. This unique accessory measures particle size without changing dispersion conditions.

- **Typical Applications**
  - Inks
  - Carbons
  - Creams
  - Magnetic samples

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Measuring with two light sources, red laser diode and blue LED, which enables detection from nanometers to millimeters with a simple optical setup.
State of the Art Sampling Systems

Wet Measurement

Sample-to-sample analysis in less than 60 seconds

The HORIBA LA-960 wet circulation system is an easy, fast and very powerful dispersion system. The standard wet system offers a full package of a dispersant fill pump, liquid level sensor, circulation pump, 30 W in-line ultrasonic probe, and drain valve, which is all software-controlled for true one-button operation. This advanced design provides highly reproducible particle size results.

Dry Measurement

Automated, powerful dry powder dispersion

The LA-960 Powderjet combines several unique and patented features to provide the most reproducible dry measurements. Use the Auto Measurement function to control vacuum, air pressure, powder flow, start/stop conditions, measurement duration, and data processing. Designed to handle every application including small sample amounts, friable powders, and highly agglomerated materials.

- Smart Scans - Trigger function
  This function allows for very precious materials to be measured accurately. When the sample amount is limited or low flow ability, the Trigger functions perfectly start and stop the measurement.

- Self-Adjusting Powder Flow
  Historically, the biggest challenge in dry powder measurement involved establishing an even powder flow. The LA-960 Powderjet has solved that challenge with a self-adjusting feedback loop to maintain a constant laser transmittance. This is a crucial factor in creating reliable, reproducible dry powder size measurements.

- Available chutes

  - Standard chute
    Equipped with every PowderJet Dry Feeder and used for most powders.

  - V type chute
    This chute is ideal for both small amounts of powder and powder which does not flow easily. e.g. magnetic powders.

  - Coated chute
    This coated chute is useful for samples which adhere to the stainless steel standard chute.

  - Vacuum sampler
    This accessory is useful for measuring very small amounts of powder.
    *Sampling table is included.
Laser scattering particle size distribution analyzer  Model: LA-960

<table>
<thead>
<tr>
<th>Measurement Principle</th>
<th>Mie scattering and Fraunhofer diffraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>10 nm - 5000 μm</td>
</tr>
<tr>
<td>Measurement Time</td>
<td>Typical measurement takes 60 seconds from liquid filling, sampling and measurement to rinsing.</td>
</tr>
<tr>
<td>Measurement method</td>
<td>Circulation measurement or fraction cell measurement (Fraction cell is optional)</td>
</tr>
<tr>
<td>Sample Quantity</td>
<td>Approximately 10 mg ± 5 g (Depending on the particle size, distribution and density)</td>
</tr>
<tr>
<td>Available carrier fluid</td>
<td>Aqua* (A type), Organic solvent (5 type) (*Ethanol can be used as a dispersing additives)</td>
</tr>
<tr>
<td>Communication</td>
<td>USB 2.0</td>
</tr>
<tr>
<td>Light Sources</td>
<td>Red solid state 5 mW laser diode (650 nm), Blue solid state 3 mW LED (405 nm)</td>
</tr>
<tr>
<td>Dispersion System</td>
<td>In-line ultrasonic probe: 30 W, 20 kHz, adjustable levels. Circulation pump: Fully automated fill and circulation pumps, 15 adjustable speeds, 4 selectable fill levels, 15 selectable circulation speeds (max: 10 L/min)</td>
</tr>
<tr>
<td>Operating Conditions</td>
<td>15—35°C (59 to 95°F), relative humidity 85% or less (no condensation)</td>
</tr>
<tr>
<td>Power</td>
<td>AC100/120-230V 50/60Hz, 300VA</td>
</tr>
<tr>
<td>Dimensions</td>
<td>705 (W) × 565 (D) × 500 (H) (mm)</td>
</tr>
<tr>
<td>Mass</td>
<td>54kg</td>
</tr>
<tr>
<td>Computer Requirements</td>
<td>PC operation, Software compatible with Windows* 7 32-bit and 64-bit environments, *contact HORIBA for additional operating system compatibilities</td>
</tr>
</tbody>
</table>

*Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

Powderjet Dry Feeder Accessory

<table>
<thead>
<tr>
<th>Dispersion Method</th>
<th>Compressed air dispersion using Venturi nozzle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Disposal</td>
<td>Vacuum-driven evacuation</td>
</tr>
<tr>
<td>Measurement range</td>
<td>100 nm - 5000 μm</td>
</tr>
<tr>
<td>Controls</td>
<td>Communication: Serial cable to LA-960 main unit. Measurement: Vibrating feeder controlled automatically via feedback or manually by user. Vacuum AUTO/OFF, Compressed Air AUTO/OFF. Air pressure adjustable from 0 - 0.4 MPa in 40 steps</td>
</tr>
<tr>
<td>Measurement Time</td>
<td>Typical measurement takes 2 seconds or longer.</td>
</tr>
<tr>
<td>Operating Conditions for PowderJet</td>
<td>15—35°C (59 to 95°F), relative humidity 85% or less (no condensation)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>332(W) × 331(D) × 244 (H) (mm) (not including dimensions of projections and LA-960 measurement unit)</td>
</tr>
<tr>
<td>Power for PowderJet Operation</td>
<td>AC100V, 120V, 230V, 50 or 60Hz, 1500VA (including vacuum but LA-960 measurement unit)</td>
</tr>
<tr>
<td>Compressed Air Supply Pressure</td>
<td>Compressed air supply origin pressure: 0.4 - 0.8 MPa</td>
</tr>
<tr>
<td>Compressed Air Connection</td>
<td>Compressed air controlling range: 0.01 - 0.4 MPa</td>
</tr>
<tr>
<td>Remarks</td>
<td>Vacuum is equipped as standard</td>
</tr>
</tbody>
</table>

When ordering the PowderJet, please specify the power requirements for the final destination.
Above specifications and functionality are valid only when PowderJet is installed on the LA-960 main unit and controlled using the LA-960 software.
Manufacturers and models indicated for vacuum, air compressor, computer, monitor, and printer are subject to change.
Air Compressor: Inlet pressure within 0.1 - 0.8 MPa. Tank capacity 24 L or larger. Flow rate 40 L/min or faster.

External Dimensions (mm)

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Class 1 Laser Product

*Class 1 Laser Product: Laser Particle Size Distribution Analyzer LA-940 Standard Model

Class 1 Laser Product

*Class 1 Laser Product: Laser Particle Size Distribution Analyzer LA-940 Model with Dry Unit Accessory
Solving a vast array of application issues

**Pharmaceutical**

The size of particles greatly influences several factors such as dissolution rate, dosing, bioavailability, and immunotoxicity, making it an essential parameter for pharmaceutical and biotechnology applications. From simple inhaled to advanced chemotherapies, particle size affects treatment efficacy.

**Functional polymers**

The performance of plastics, such as PET, is determined by the molecular weight (i.e., size) of the polymers used to prepare the material. The same sort of analysis is also critical for sealants and adhesives.

**Energy**

Particle size influences both capacity and coulombic efficiency of battery-electrode materials. The electrical behavior of materials such as the lithium electrodes is predicted by size analysis.

**Pigments**

Particle size analysis is used to evaluate new formulations, characterize raw materials, and perform product quality tests. The ink used in inkjet printers requires excellent particle sizing to ensure its correct application to paper without blurring or smudging.

**Paper**

A number of additives are incorporated in the papermaking process. From calcium carbonate, which is used as filler, to a variety of minerals and latex added to the surface coatings to improve brightness, gloss and printability, they all require particle sizing.

**Minerals**

Minerals are used in many industries, including construction, fracking and abrasives. In all cases, the performance of the minerals is dependent on the size and shape of the particles.
Innovations in hardware and software

State of the art nanoparticle measurement

The advanced design of the LA-960 allows for easy measurement of nanoparticle applications. NIST-traceable size standards verify that the LA-960 accurately measures peaks as fine as 30 nanometers.

Overlay of 30, 40, 50, and 70 nanometer results

Measurement range

10 nm - 5,000 um

Wide range

The LA-960 features a wide measurement range to measure every application. The unique optical bench is user-friendly and standard in every LA-960 configuration.

Method Expert

Operation

The LA-960 Method Expert software makes it easy to create robust, powerful methods for research and development purposes and quality control. The Method Expert is a series of guided, automated tests with advice to help the user choose values for refractive index, concentration, ultrasonic dispersion, pump speed, and measurement duration. Without any training, users can generate effective data in a short amount of time using the software.

60 - second measurement cycle, even in wet mode

This incredible speed is made possible by automatic laser alignment, fully automated liquid handling, and intuitive software design.

Data correlation support

Correlation to historic data is an increasingly important factor when choosing a new particle size analyzer. The LA-960 provides full backwards compatibility with the LA-950 and an intelligent correlation software to the LA-920/930 series. Correlation to other instruments is often possible with assistance of HORIBA’s applications and technical support experts.
The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System OHSAS18001. We have now Integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.

Please read the operation manual before using this product to ensure safe and proper handling of the product.

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