

# HORIBA Global Application/ Service Network



**IMS** 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 assure safe and proper handling of the product.**

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# HORIBA Scientific

Partica LA-960V2 Series

Laser Scattering Particle Size Distribution Analyzer

**partica**  
 Laser scattering particle size distribution analyzer LA-960V2 Series

*See the True Characterization of Your Particles.*

Bulletin:HRE-3683C

Printed in Japan 2001SK00

## HORIBA proudly introduces the newest breakthrough in particle size technology.

### Laser Scattering Particle Size Distribution Analyzer Partica LA-960V2

This latest evolution in the LA series advances scientific knowledge for tomorrow's world through intuitive software, unique accessories, and high performance. The Partica LA-960V2 continues HORIBA's proud tradition of leading the industry with innovative design. Further evolution has been achieved by visualizing the particle dispersion in real time.



### Provided high accuracy and resolution for wide application

CMP slurry  
Catalysts  
Ink / Pigments  
Plastics  
Minerals  
Metal powder  
Emulsion

- Ceria
- Silica
- Alumina

Battery  
Capacitor  
3D printing  
Paper Coating  
Pharmaceutical  
Cosmetics  
Food / Drink  
Building materials

- Positive electrode
- Negative electrode
- Electrolyte



## HORIBA's Original Optical Design

HORIBA's groundbreaking 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 Partica LA-960V2 uses 87 logarithmically spaced silicon photodiode detectors covering a range of 0.006 - 165.7 degrees to measure complete particle size distributions.

### Superior Instrument-to-Instrument Precision

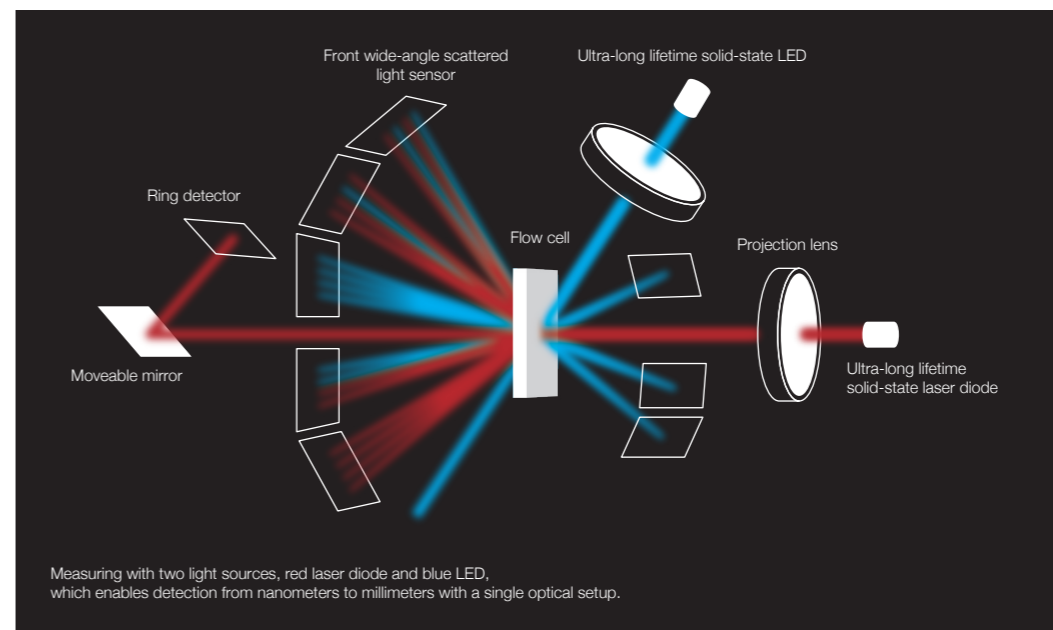
The Partica LA-960V2 is designed and built to provide the same experience regardless of manufacture date, operator skill, or geographic location. Achieves unmatched instrument agreement without the hassle of correlation.

### Automatic Laser Alignment in Seconds

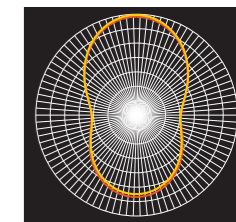
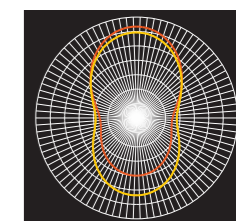
Always make perfect measurements with computer-controlled laser alignment. The alignment process is finished in only a few seconds with HORIBA's innovative approach.

### Guaranteed Accuracy and Precision

The Partica LA-960V2 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.



Superior nanoparticle detection using red and blue light sources



0.05 μm 650 nm  
0.07 μm 650 nm

## State of the Art Sampling Systems

### Wet Measurement

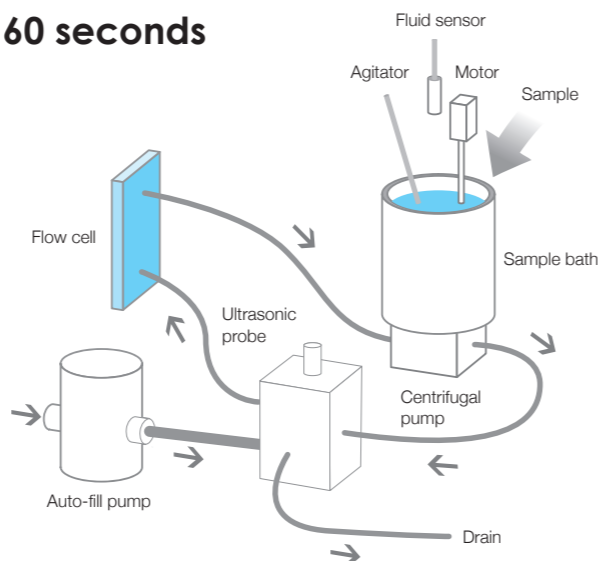
#### Sample-to-sample analysis in less than 60 seconds

The Partica LA-960V2 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.

**Auto-fill** Auto-fill pump → Flow cell → Sample bath

**Circulation** Sample bath → Ultrasonic probe → Flow cell

**Drain** Flow cell → Sample bath → Drain



### Dry Measurement

#### Automated, Powerful dry powder dispersion

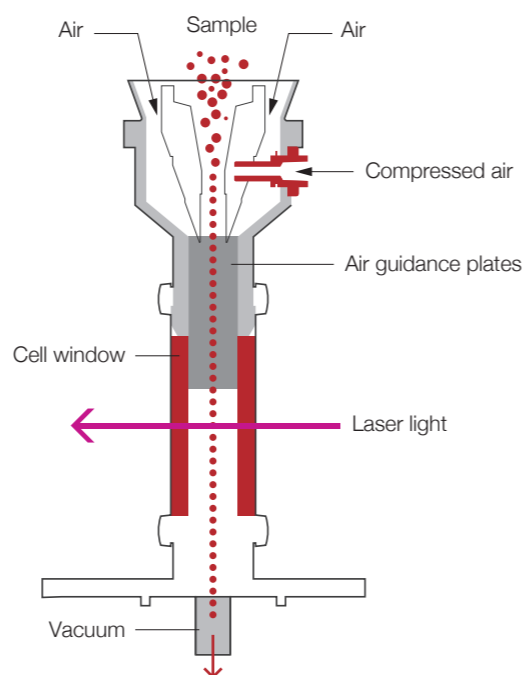
The Partica LA-960V2 Powderjet combines several unique and patented features to provide the most reproducible dry measurements. Use the Auto Measurement function to control vacuum, air pressure, powder flow, start/stop conditions, measurement duration, and data processing. Designed to handle every application 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 flowability, 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 Partica LA-960V2 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.



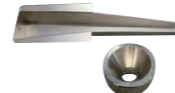
##### V type chute

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.



## Accessories

### High Concentration Cell

New

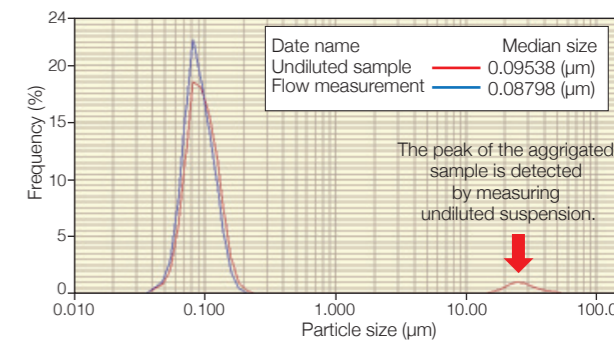


#### Feature

The High Concentration Cell Unit allows measurement closer to original concentration with low dilution rates, without dilution and variable concentration.

#### Typical Applications

Understand the particle dispersion state of high concentration slurry, such as positive and negative electrode materials of secondary batteries, inks, paints, pigments, emulsions etc.



■ Comparison of the results of undiluted suspension measurement and flow measurement (diluted with dispersant)

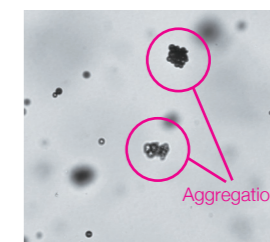
### Imaging Analysis Unit (built-in option)

New



#### Feature

The imaging unit visualizes the particles in the wet circulation system. It is very small and built into the main unit, and can acquire particle images without changing the usability. Measurement range: 9μm-1000μm



#### Typical Applications

Find and count small amounts of large particles and aggregated particles. Particle shape analysis and bubble state observation are also possible.

### MiniFlow (Circulation System)



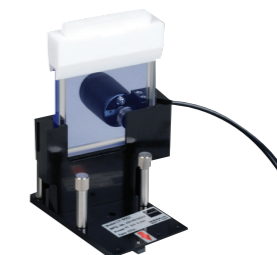
#### Feature

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. Measurement range: 10nm - 1000μm

#### Typical Applications

Precious samples requiring powerful dispersion and materials requiring hazardous dispersants such as organic solvent and oil solvent.

### 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 fully solvent resistant.

#### Typical Applications

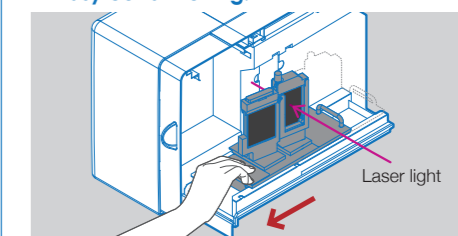
Samples requiring minimal dispersion such as precious samples, bio material, and highly volatile solvent. Samples to measure without dispersing force.

### Auto Sampler (Wet measurement in powder)



The Auto Sampler is a rotary table-type automatic sampling system equipped with 24 detachable sample cups.

#### Easy cell switching.



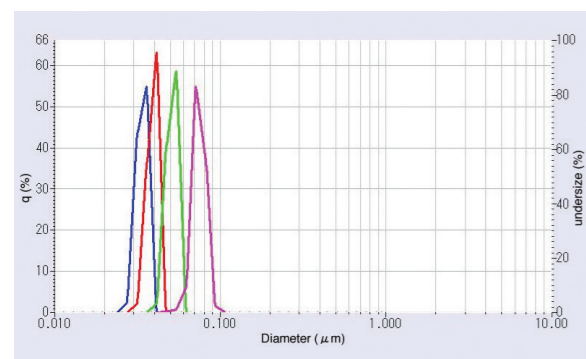
Change cells just by sliding changer table. No tools needed.

## Innovations in hardware and software

### Performance

#### State of the art nanoparticle measurement

The advanced design of the Partica LA-960V2 allows for easy measurement of nanoparticle applications. NIST-traceable size standards verify that the Partica LA-960V2 accurately measures peaks as fine as 30 nanometers.



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

### Wide range

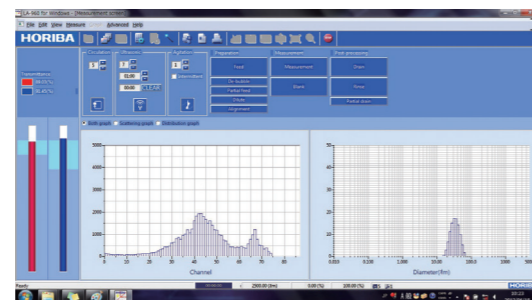
#### Measurement range 10 nm - 5,000 μm

The Partica LA-960V2 features a wide measurement range to measure every application. The unique optical bench is user-friendly and standard in every Partica LA-960V2 configuration.

### Operation

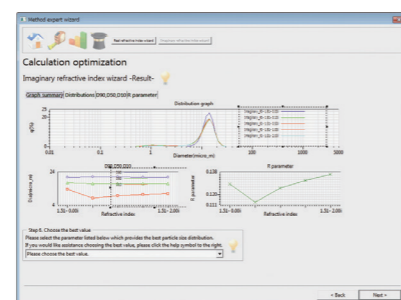
#### Method Expert

The Partica LA-960V2 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.



Measurement Screen

Real-time display of the measurement result



The Method Expert recommends the most suitable refractive index.

### Data support

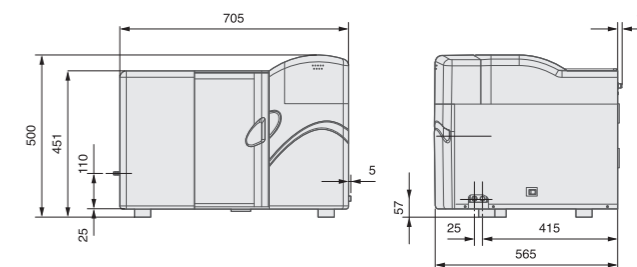
- ✓ Traceability certification
- ✓ 21 CFR Part 11 compliant software
- ✓ IQ/OQ/PQ documents support
- ✓ Data correlation support with old model

### Laser scattering particle size distribution analyzer LA-960V2 series

Measurement Principle	Mie scattering and Fraunhofer diffraction
Measurement range	10 nm - 5000 μm
Measurement Time	Typical measurement takes 60 seconds from liquid filling, sampling and measurement to rinsing.
Measurement method	Circulation measurement or fraction cell measurement (Fraction cell is optional)
Sample Quantity	Approximately 10 mg - 5 g (Depending on the particle size, distribution and density)
Dispersing Volume	Approximately 180 mL for standard pumping system 5/10/15 mL for Fraction Cell accessory Minimum volume 35 mL for Mini Flow accessory Approximately 1 L of LiterFlow option
Available carrier fluid	Aqua* (A type), Organic solvent (S type) (*Small volume ethanol can be used as a dispersing additive)
Communication	USB 2.0
Light Sources	Red solid state 5 mW laser diode (650 nm), Blue solid state 3 mW LED (405 nm)
Dispersion System	In-line ultrasonic probe: 30 W, 20 kHz, adjustable levels Circulation pump: Fully automated fill and circulation pumps, 4 selectable fill levels, 15 selectable circulation speeds (max: 10 L/min)
Operating Conditions	15-35°C (59 to 95°F), relative humidity 85% or less (no condensation)
Power	AC100-240V 50/60Hz, 300VA
Dimensions	705 (W) x 565 (D) x 500 (H) mm
Mass	54kg
Computer Requirements	PC operation, Software compatible with Windows® 10 32-bit and 64-bit environments, *contact HORIBA for additional operating system compatibilities

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

### Dimensions (mm)



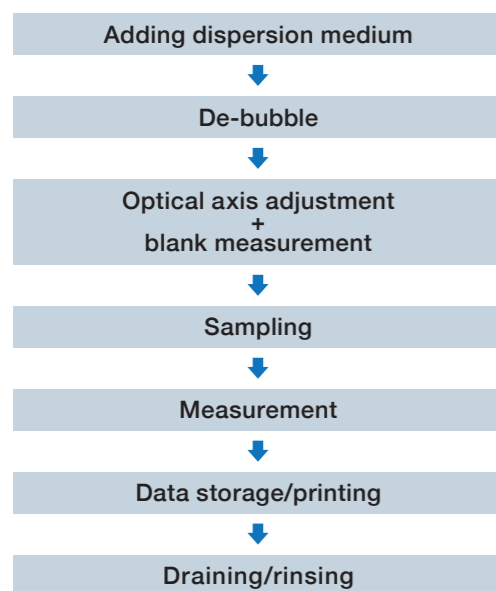
#### Class 1 Laser Product

※ Laser Particle Size Distribution Analyzer LA-960V2 Standard Model

### Speed

#### One click measurement Navigation system

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



### Powderjet Dry Feeder Accessory

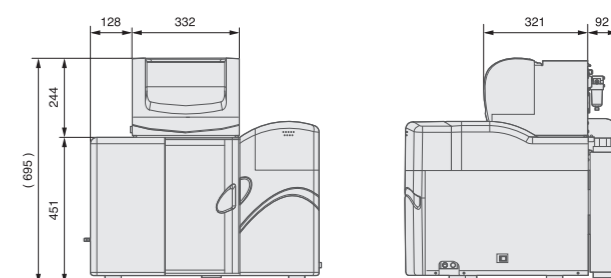
Dispersion Method	Compressed air dispersion using Venturi nozzle
Sample Delivery	Vibrating feeder
Sample Disposal	Vacuum-driven evacuation
Measurement range	100 nm - 5000 μm
Controls	Communication: Serial cable to LA-960V2 main unit Measurement: Vibrating feeder controlled automatically via feedback or manually by user, Vacuum AUTO/OFF, Compressed Air AUTO/OFF, Air pressure adjustable from 0 - 0.4 MPa in 40 steps
Measurement Time	Typical measurement takes 2 seconds or longer.
Operating Conditions for PowderJet	15-35°C (59 to 95°F), relative humidity 85% or less (no condensation)
Dimensions	332 (W) x 321 (D) x 244 (H) mm (not including dimensions of projections and LA-960V2 measurement unit)
Power for PowderJet Operation	AC100V, 120V, 230V, 50 or 60Hz, 1500VA (Including vacuum but LA-960V2 measurement unit)
Compressed Air Supply Pressure	Compressed air supply origin pressure: 0.4 - 0.8 MPa Compressed air controlling range: 0.01 - 0.4 MPa
Compressed Air Connection	Quick connector for resin tube with 6mm outer diameter (Compressed air supply equipment must be provided separately)
Remarks	Vacuum is equipped as standard

\* 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 Partica LA-960V2 main unit and controlled using The Partica LA-960V2 software.  
\* Manufacturers and models indicated for vacuum, air compressor, computer, monitor, and/or printer are subject to change.

#### Air Compressor

Inlet pressure within 0.5 - 0.8 MPa, Tank capacity 26 L or larger, Flow rate 45 L/min or faster

### Dimensions (mm)



#### Class 1 Laser Product

※ Laser Particle Size Distribution Analyzer LA-960V2 Model with Dry Unit Accessory