Leading Particle Characterization Technology

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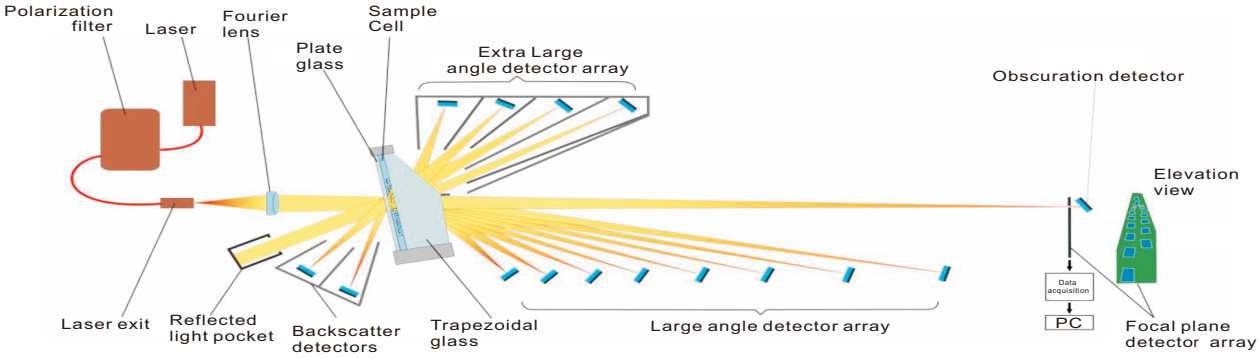
LT 3600 series - Intelligent particle size analysis

The LT 3600 is a new generation of the particle sizing instrument, used by many companies and research institutes across a wide range of industries. The instrument uses the technique of laser diffraction to measure particle size distributions from 0.015um up to 3600um.Combined with a range of wet and dry dispension accessories, it opens up more applications than ever before.



Principle Diagram

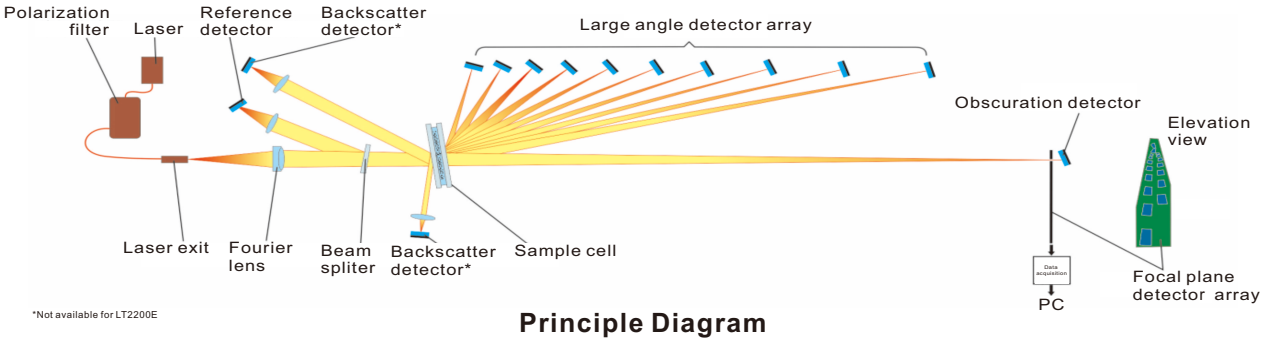
Innovations and Features

- Fully comply with ISO13320 standard
- Improved inversion algorithm and self-adaptive technique with high resolution and sensitivity
- Size range from 0.015μm - 3600μm with no need for lens change
- Data acquisition rate up to 20kHz
- Solid-state laser light source with automatic temperature stabilizing system
- Spatial filter and polarization combined with optical fibre technology
- Correction of anomalous change of airy disk (ACAD) in diffraction
- Tilted and trapezoid cell windows
- Unique optic configuration with grilling super-large angle detector array, no dead detection zone
- Dual-drive dispersion and integration technology
- Continuing dispersant level sensing and control

Specifications	LT 3600	LT 3600 Plus
Principle	Laser light scattering	
Analysis	Full Mie theory and Fraunhofer scattering	
Size range	0.02um-3600um	0.015um-3600um
	No need for lens change and calibration	
Detection system	Super large angle of detector array with area compensation and gridded holder, No dead detection zone within angular range	Super large angle of detector array with area compensation and gridded holder, No dead detection zone within angular range, back scatter detectors integrated
Cell Windows	Tilted and trapezoid cell windows	
Light source	Max.20mW,638nm Solid-state laser with thermostat integrated	
Spatial filter	OF filter with polarization	
Alignment	Smart rapid alignment with full automation	
Typical measurement time	Less than 10s	
Data acquisition rate	Up to 20kHz	
Accuracy	Better than 0.6%(The mean size of NIST latex standard)	
Repeatability	Better than 0.5%(Sample and sample preparation dependent)	
Optical system weight	28kg	28.5kg
Optical system dismensions	650mmx300mmx320mm	

LT 2200 series - Intelligent particle size analysis

LT2200 series is newly designed for a practical, reliable solution to the routine particle sizing needs of a variety of industries. It is a flexible and modular, but fully integrated particle sizing system with high performance/price ratio and assured measurement capability from submicron to millimeter, wet or dry, from milligram quantities of precious pharmaceuticals to the measurement of bulk chemicals and minerals.



Principle Diagram

Innovations and Features

- Fully comply with ISO13320 standard
- Improved inversion algorithm and self-adaptive technique with high resolution and sensitivity
- Size range from 0.02μm - 2200μm with no need for lens change
- Data acquisition rate up to 20kHz
- Solid-state laser light source with automatic temperature stabilizing system
- Spatial filter and polarization combined with optical fibre technology
- Correction of anomalous change of airy disk (ACAD) in diffraction
- Unique optic configuration with grilling super-large angle detector array, no dead detection zone
- Dual-drive dispersion and integration technology
- Continuing dispersant level sensing and control

Specifications	LT 2200	LT2200E
Principle	Laser light scattering	
Analysis	Full Mie theory and Fraunhofer scattering	
Size range	0.02um-2200um	0.1um-1200um
	No need for lens change and calibration	
Detection system	Super large angle of detector array with area compensation and gridded holder, back scatter detectors integrated	Super large angle of detector array with area compensation and gridded holder, No dead detection zone within angular range
Cell Windows	Parallel and tilted	
Light source	Max.20mW, 638nm Solid-state laser with thermostat integrated	
Spatial filter	OF filter with polarization	
Alignment	Smart rapid alignment with full automation	
Typical measurement time	Less than 10s	
Data acquisition rate	Up to 20kHz	
Accuracy	Better than 0.6%(The mean size of NIST latex standard)	
Repeatability	Better than 0.5%(Sample and sample preparation dependent)	
Optical system weight	26kg	25kg
Optical system dismensions	660mmx260mmx317mm	

Sample dispersion unit family

Linkoptik technical team is well aware of the mechanism of particle dispersion and the importance of the sample dispersion system in the process of particle size analysis. The Hydrolink Wet Dispersion and Aerolink Dry Dispersion System have been featured prominently in intelligent change of the dispersing energy and used for fully dispersion and representative delivery of a variety of samples, regular or irregular, fragile or agglomerated, with different densities and size distribution.

Hydrolink — Full-automatic wet dispersion unit

- Standard volume maximum 1000ml
- Dual-drive design and separate control for pump and stirrer to ensure uniform dispersion and delivery of wide distribution or highdensity samples
- Automatic bubble elimination technology
- High efficiency ultrasonic dispersion unit
- Continuous and adjustable ultrasonic power
- Suspended liquid level sensing and continuous liquid volume control technology
- Automatic sample processing and cleaning
- SOP control and multi-user SOP sharing

Hydrolink SE — Full-automatic wet dispersion unit

- Standard volume maximum 1000ml
- Powerful impeller pump and dual-stirrer to ensure uniform dispersion and delivery of wide distribution or highdensity samples
- Automatic bubble elimination technology
- High efficiency ultrasonic dispersion unit
- Continuous and adjustable ultrasonic power
- Suspended liquid level sensing and continuous liquid volume control technology
- Automatic sample processing and cleaning
- SOP control and multi-user SOP sharing

Hydrolink SV — Small volume wet dispersion unit

- The minimum sample volume 40ml
- Stainless steel design, Chemically compatible with a wide choice of organic and inorganic dispersants
- Built-in ultrasonic unit is optional
- Controlled by SOP or circulation and stirring keys on board

Aerolink — Dry dispersion unit

- Based on multiple dispersion mechanism, automatically dispersing energy input, to achieve effective dispersion of diverse samples
- Automatic control of air pressure, 0 bar-4.5bar adjustable
- Air pressure control accuracy +/-0.1bar
- Sample feed rate controlled by SOP with precision better than 1%
- Venturi dispersion unit with variable energy , suitable for all types of samples
- Sample tray with continuously adjustable gap
- Automatic real-time vacuum detection to avoid contamination of the sample cell
- Straight-through sample path to reduce sample adherence

Spraylink - Real time spray dynamics presenting

The spray particle size and its control determine the final quality of many products, such as drug delivery during inhalation and nasal spray, fuel spray, aerosol, fuel efficiency evaluation of rocket launch, energy and chemical industry and nozzle research.The high-speed movement of spray particles with wide particle size range and the irregularity of the spray pattern requires high adaptability and high-speed diffraction signal processing capability for the spray particle size analysis system. Spraylink has been specifically designed to meet these challenges, delivering routine, accurate and precise spray particle size measurement in the size range of 0.1um to 2080um concentration spray up to 90% obscuration. with no need for change of lens.The Spraylink system integrates an optimized high-sensitivity detection and holographic signal processing system, combined with high concentration compensation technology, which greatly reduces the effect of multiple diffraction during the measurement of high-comcentration spray up to 90% obscuration.

Innovations and Features

- 10kHz maximum acquisition rate, perform 10000measurements per second and capture the dynamics of size change in every 0.1ms interval
- Unique lens configuration and optimized optics enable measurements over large working ranges
- Measurement across a wide range (0.1um-2080um)with no need for optics change
- The newest algorithm ensures accurate particle size distributions can bemeasured at high obscuration
- Rapid auto-alignment
- Lens protection with air purging
- Customizable optical bench arrangement
- Measurement synchronization via flexible triggering options
- Stable construction and full metal cover and optical bench design
- Instantaneous playback of size history and frame-by-frame event analysis
- Analysis of the dynamic changes of particle size distribution with time
- Overlay of results at different time point

Specifications	Spraylink
Principle	Laser scattering
Optical models	Mie theory and Fraunhofer scattering, including high concentration compensation technique
Size range	0.1um-2080um, With no need for changing lens
Working range	150mm at 0.3um, >1800mm at 7um
Concentration range	Maximum obscuration : 90%(dependent on particle size range)
Detection system	42 element detector array with area compensation and gridded holder
Measurement triggering	Internal: Based on transmission or light scattering levels; External: Based on TTL input or simple switch trigger
Light source	Max.20mW,638nm Solid-state laser with thermostat integrated
External synchronization	TTL trigger output
Alignment	Automatic rapid alignment
Enclose rating	IP 65 for transmitter and receiver modules
Acquisition rate	Continuous mode: 1Hz, Rapid mode:1kHz, 2.5kHz, maximum 10kHZ
Accuracy	Better than Dv50 +/- 0.5%(NIST-traceable latex standard)
Repeatability	Better than Dv50 +/- 0.5%(NIST-traceable latex standard)
Optical system weight	28kg
Optical system dismensions	1100mmx460mmx538mm(Standard optical bench)

Nanolink S900 - Reliable nano particle characterization

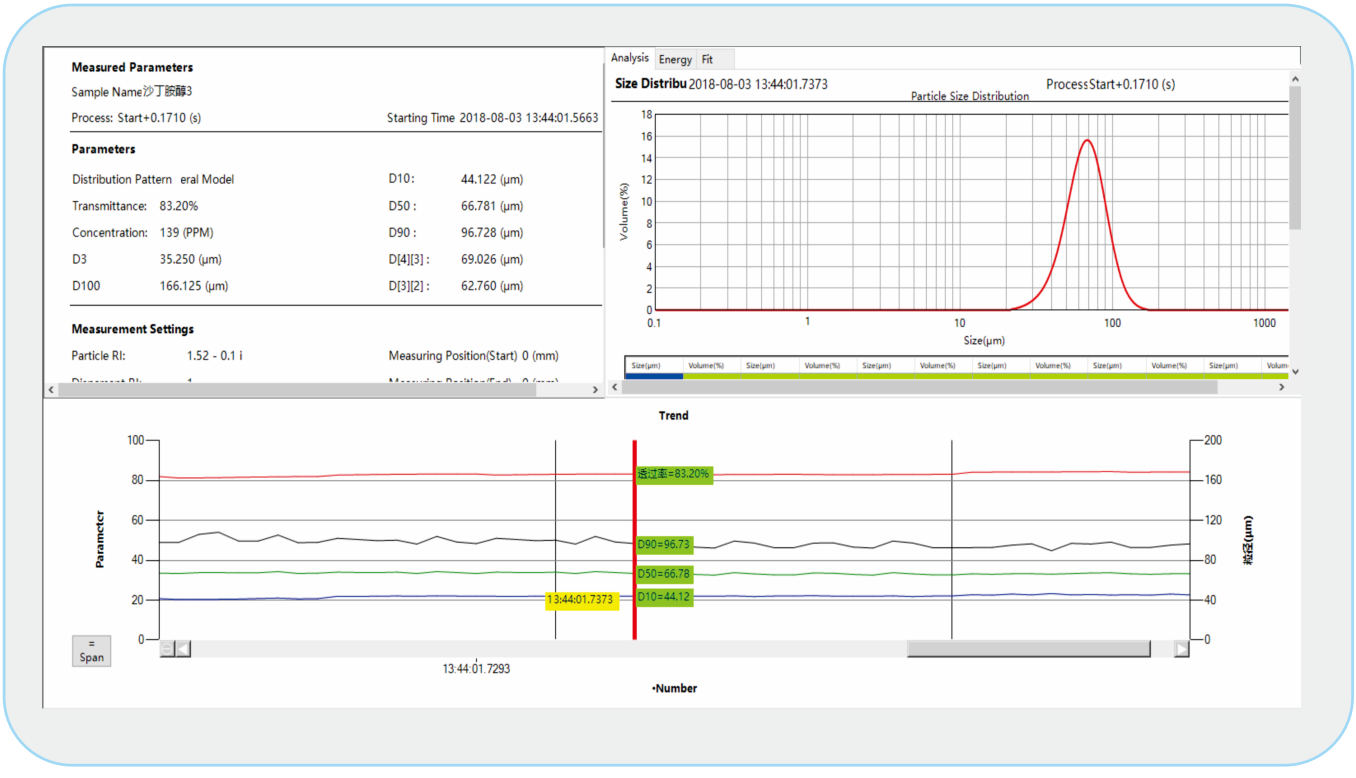
Nanolink S900 uses the technique of dynamic light scattering to measure the size of a wide range of materials such as organic and inorganic particles,pharmaceutical dispersions and emulsions, polymers, surfactant micelles and proteins in size range of 0.6nm to 10um.The measurement technique is absolute, no calibration is required and offer reliable and accurate measurement for your particle characterization needs in a simple way.

Innovations and Features

- 90°Classic light scattering
- Size range:0.6nm-10um
- A new generation of high speed digital correlator
- High grade detection unit with optical fiber technology(APD is optinal)
- Max. 50mW, 532nm Solid-state laser with thermostat integrated
- Temperature control : 0°C -90°C+/-0.1°C(120°C is optional)
- Condensation control --Dry gas purging

Specifications	Nanolink S900
Principle	Dynamic light scattering
Size range	0.6nm-10um*
Accuracy	Better than +/- 1%(The mean size of NIST latex standard)
Repeatability	Better than +/- 1%(The mean size of NIST latex standard)
Minimum sample concentration	0.1mg/ml*
Minimum sample volume	20ul
Measurement angles	90°C
Temperature control range	0-90°C(120°C is optional)
Temperature control precision	+/- 0.1°C
Condensation control	Purge facility with dry air
Light source	Max.50mW, 532nm Solid-state laser with thermostat integrated
Correlator	Minimum sample time :25ns, Dynamic range> 10^{11}
Detector	PMT with high sensitivity and very low dark count (APD is optional)
System weight	25kg
System dimensions	378mm*397mm*248mm

Multiple data report and display



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Linkoptik Instruments is a leading company in particle characterization. Since Dr Zhang, the founder of the company developed the first commercial laser Diffraction particle sizer in China in 1990s, the team has led the field of laser diffraction particle sizing for more than 20 years in China. With a growing portfolio of patented technologies and extensive industry applications knowledge, Linkoptik helps customers better understand a wide variety of materials, ranging from pharmaceuticals to chemicals and polymers, from micro particle and nano particle suspensions as well as emulsions, through to sprays and aerosols. Importantly, the applications expertise that we have accumulated is available to every customer and enables customers to achieve their competitive advantage.

- Correction of anomalous change of airy disk (ACAD) in diffraction
- Optimization of inversion algorithm and self-adaptive technique
- Spatial filter and polarization combined with optical fibre technology
- Tilted and trapezoid cell windows
- Dual-drive dispersion and integration technology
- High speed sampling design
- Measurement result playback
- Condensation control

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