

# DL3000

## Zetasizer S173



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### Specifications

- **Detection Principle:** Dynamic Light Scattering detector with non-invasive back scatter (NIBS®)
- **Temperature Range:** 0°C - 90°C
- **Laser:** 4mW He-Ne, 633nm
- **Laser Attenuator:** Automatic, transmission 100% to 0.0003%
- **Detector:** Avalanche Photodiode, Q.E > 50% at 633nm
- **Product Laser Class:** Class 1 Compliant, EN 60825-1:2001 and CDRH
- **Particle Size Range (Dh):** 2.0nm - 2.0 µm
- **Minimum Sample Volume:** 12µL
- **Minimum Volume for Automated Measurement:** 4mL
- **Minimum sample concentration:** 0.1mg/mL Lysozyme  
0.1ppm polystyrene latex (60nm)
- **Maximum Sample Concentration:** 40% w/v\*
- **Flow Rate Maximum:** 1mL/min
- **Absolute Molecular Weight Range using Debye Plot:** 980Da - 2x10<sup>7</sup> Da\*
- **Molecular Weight Range Estimated from Hydrodynamic Diameter:** 342Da - 2x10<sup>7</sup> Da\*
- **Weight:** approx. 21 kg
- **Outer Dimensions:** Width/Height/Length 320x260x600 mm
- **Power Supply:** AC 120-240V; 50-60 Hz
- **Power Consumption:** 100W

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High Sensitivity Online Dynamic Light Scattering Detector, special customized for use connected to Field-Flow Fractionation (AF2000, CF2000 and TF2000). Possibility to perform online DLS measurement to obtain Particle Size (Rh), Molecular Weight (Mw) and corresponding distributions of dispersed particles and molecules separated by Flow, Centrifugal and Thermal Field-Flow Fractionation.

#### Zetasizer Flow Detector

The advanced detector hardware allows operation in Online Mode connected to FFF with a special flow cell for continuous DLS and also in Offline Mode using standard cuvette cells as stand-alone detector for batch DLS measurements. The system allows input of up to two additional external FFF detectors (e.g. RI, UV, FLD, etc.) and automated operation when used together with the PN9020 Interface Box for remote start capability. The Zetasizer Flow-S is connected as the last detector inline. Switch between flow and batch mode measurements is achieved by simply changing the cuvette within seconds. The system will automatically identify eluted FFF peaks without any calibration, expressed as size or molecular mass. Software allows overlay of RI, UV and FLD traces with Rh data and also static light scattering intensity signal. Using the Zetasizer Flow-S there is no need to rely on size or molecular weight calibration standards for FFF anymore.

#### Zetasizer Flow Software

The advanced detector software allows fully automated operation and ease of use by employing SOPs for repeatability between operators, systems and sites. There is a custom report generator integrated to meet the requirements of every laboratory. Several parameters can be easily monitored, such as temperature trend analysis, time trend analysis, selected parameter trend analysis, overplotting of results for direct comparison and a full range of statistical plots

#### Online Mode Specifications

Particle size range (Dh): 2.0 nm - 2.0 µm\*

Molecular weight range estimated from Dh or calculated from Debye plot: 10E4 - 10E7 Da\*

Sensitivity: 200 µg total sample for 67.000 Da BSA; 50 µg of 60nm polystyrene latex,

Typical FFF flow rate range: 0,05 to 1,0 ml/min

Pressure range: maximum 1,5 bar differential pressure at cuvette inlet/outlet

Flow cell volume: 480 µL

\* Depending on sample material, concentration and FFF flow rate

#### Batch Mode Specifications

Particle size range (Dh): 0.3 nm - 10 µm; Peak mode range (Dh), 0.6nm - 8.9 µm

Molecular weight range estimated from Dh: 342 - 2x10<sup>7</sup> Da\*

Molecular weight range calculated via Debye plot: 980 - 2x10<sup>7</sup> Da\*

Sensitivity: 0.1ppm\*, 0.1mg/mL, 15 kDa protein; 0.1ppm of 60nm polystyrene latex, conc. maximum: 40% w/v\*

Minimum sample volume: 12µL

\* Depending on sample material, concentration and FFF flow rate

#### Options (to be selected)

- 1) High power laser/alternative wavelength 50mW, 532nm
- 2) High temperature up to 120°C
- 3) Narrow band filters for 633nm or 532nm to improve signal for fluoresce samples
- 3) Pharma 21 CFR part 11 software option, enabling an operating mode that assists with ER/ES compliance
- 4) Research software option for advanced system utilities
- 5) Zetapotential measurement option.

#### Required Parts

- 1) Computer with minimum recommended computer specifications as follows:  
Pentium P4 PC 2.8GHz Dual core processor, 2GByte RAM, 160GByte hard disk drive, 1024x 768 screen resolution, CD-ROM drive, USB port, Windows XP Pro (SP3), Vista or Win 7 operating system. Any used laptop PC must have a free USB port to operate with the system
- 2) Needs PN9020 Interface Box for automated operation of FFF and Zetasizer Flow.
- 3) Flow Cell has to be ordered extra